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### An Unproductive Debate

THE all-night sitting with which the House of Commons began its debate of the Lords amendments to the Transport Bill was unproductive, dealing almost entirely with the first few clauses on sale of nationalised road transport assets. The debate had been postponed from immediately before the Easter recess, when time was short; but the absence of the guillotine seems simply to have allowed the Opposition to waste time and make baseless—and useless—accusations against the Government and its supporters. The amendments inserted in the Bill's passage through the Lords were familiar and had been thrashed out more than once before. One useful House of Lords amendment, absolving the Road Haulage Executive from the obligation to dispose of property in the form of money, was agreed at the beginning of the debate. Thereafter the House occupied itself mainly with the Labour accusation of the Government favouring its supporters in the matter of advance information as to the road haulage assets to be sold. The best that can be said of these charges, including the serious accusation against the United Dominions Trust, was said by Mr. Alan Lennox-Boyd, Minister of Transport, who very reasonably pointed out the inevitability of preliminary contacts when changes of this sort were in the air. He also could not refrain—excusably, perhaps, but to no great purpose—from hinting

at similar conduct in Labour circles when nationalisation of transport was imminent, six years ago. Nevertheless, for over seventeen hours' debate, Parliament had little to show. The debate, which had hardly entered on the wide field to be discussed under the Bill, was due to be continued later in the week as we went to press. The reorganisation of the railways is to be the subject of a White Paper, but in general terms it could hardly escape discussion in this Commons debate, particularly in the prevailing temper of the Opposition. Two of the most controversial points for discussion as part of the Bill are the amount of road haulage vehicles to be retained by the British Transport Commission, and freedom for the railways in charging. It is to be hoped that Parliament, and especially the Opposition, which, with passage of the Bill inevitable and imminent, might be expected to be more constructive, will rise to its responsibilities; otherwise the outlook for transport is not hopeful.

### G.I.P.R. Contributions to Indian Railways

THE centenary celebrations of the Indian Railways this year have exhibited the development and present activities of the system as a whole. In this general theme the prime occasion for the centenary—the opening of the Bombay to Thana section of the Great Indian Peninsula Railway—may be seen in less than its true significance, and Sir Guthrie Russell took the opportunity at the Great Indian Peninsula Officers' dinner last week to review the debt of the Indian railways to that system in several respects. His speech, reported on another page, drew attention in particular to the great achievement represented by the survey and construction of the Bhore and Thull Ghat projects, on which G.I.P.R. engineers began their surveys in 1850. Alternative routes had been considered, and the one apparently most favoured at the time would have added some 130 miles to the distance between Bombay and Calcutta. The determination with which the difficulties of the Ghat sections were faced and overcome made an invaluable contribution to Indian railway communications, and left a lasting monument to British engineering and skill. Sir Guthrie Russell also recalled other directions in which the G.I.P.R. had been a pioneer, among them being the introduction of electric railway traction in India and the building up of an electrified system which was now one of the largest in the Commonwealth.

### "Green Arrow" Service Restored

REINTRODUCTION by British Railways on May 1 of the "Green Arrow" freight "registration" service, though confined at least provisionally to wagon load export traffic—except to Ireland—to ports, is a welcome revival of a prewar facility. Its aim is correct delivery, especially in relation to loading at ports, rather than quicker transit time. For the moderate sum of 2s. 6d. per consignment, the same as prewar, the trader obtains registration of the consignment, effected by distinctive labelling and telephone or telegraph advices, and also facilitates advance information of the time of delivery; extra care is taken that the wagon is worked in the appropriate train service. The facility would have been reintroduced in 1951 but for the cuts in booked freight train services caused by the coal shortage. Selection of exports as the first traffic to which the limited facility can be applied is a recognition of their vital importance to the national economy, though these consignments already are the object of much care in securing expeditious transits. The handling of ordinary traffic not specially registered has been and is constantly being improved by rationalisation of train and feeder road services, mechanical equipment, and the other means described in our pages from time to time.

### A Canadian Dilemma

INCREASING operating costs and the resultant need to increase freight rates are placing the railways of Canada in a dilemma. The railways were pricing themselves out of some business, Mr. Donald Gordon, Chairman & President, Canadian National Railways, told the

Canadian House of Commons Railway Committee recently. How much higher freight rates could go was a matter which was complicated by competition, chiefly from road hauliers. With each new freight rate award the area in which they could gain an effective increase was narrowing, and the 98 per cent increases authorised since 1947 the company had been able to use to increase revenue by only 38 per cent. Mr. Gordon gave "self-discipline" as the answer, though he was careful to add that he was not aiming this admonition at railway labour—the Canadian National Railways payroll accounts for no less than 56 per cent of operating costs. The company was seeking to provide its patrons with cheaper dining car meals and it intended to submit new and "surprising" proposals for suburban traffic, on the working of which there was a heavy loss. It probably made a little profit on its main-line passenger traffic but lost on almost every one of its branch lines.

### Popularising Railway Travel

**C**OMPETITION from other forms of transport has made it necessary for railway advertising to go beyond the announcement of particular facilities, and to spread the knowledge that travel by train has its own attractions and advantages. A series of six press advertisements from the Railway Executive, linked by the general caption "Go by Train," is recalling to the public the possibilities of recreational travel offered by their local station. Different announcements in the series suggest railway travel for visits to friends; and for sightseeing, exploring unfamiliar territory, or enjoying a day out with escape from routine as its main objective. Another announcement in the series emphasises the comfort of railway travel, and there is one in connection with the British Railways holiday guides. This press campaign is supported by a poster in which the subjects of all six advertisements are combined, and presented against the background common to all of a train running diagonally across the design. There is a further example of a similar theme in two posters which have appeared recently under the titles of "By Rail to Wales," and "By Rail to the West." These Western Region productions combine the appeal of pictures of trains in motion with picturesque settings, and form another reminder to the travelling public that a seat in a railway carriage may be a vantage point from which to observe scenery as well as a method of transport.

### Cutting Restaurant Car Losses

**E**XPERIMENTS are being made by several American railways today to reduce the losses on restaurant car operation by pre-cooking and portioning out the food in central commissaries, freezing it, and delivering it in packaged form for storage in restaurant car refrigerators, and then restoring it to serving heat in special ovens on the cars. A special technique is required, if the food so served is to lose nothing in flavour, tenderness, and general attractiveness, and the propane-gas-fired thermostatically-controlled ovens that have been introduced for the reheating in the cars are proving very successful. To date, the most extensive developments in this direction have been on the Chicago, Rock Island & Pacific Railroad, which has now standardised this type of restaurant car service on four of its "Rocket" streamline trains—those working between Chicago and Peoria, Des Moines, Kansas City, and Denver—as well as on the Chicago-Los Angeles "Imperial." To date, service economies so effected have enabled the Rock Island to pare its restaurant car deficit by 22 per cent, while at the same time reducing its restaurant car charges by 15 to 20 per cent. Comment by passengers on the food which has been so served to date has been almost entirely favourable, and it is encouraging Rock Island passengers on the food which has been served to date has been almost entirely favourable, and it is encouraging to learn that, as the result of the reduced prices, passengers have taken more comprehensive meals, the average amount paid per meal having gone up from \$1.62 to \$1.67.

### Railway Experience with Steel Castings

**A** CUSTOMER/FOUNDER CONVENTION organised by the British Steel Founders' Association was held in London from April 15 to 17. The conference, the first of its type in the industry, has been agreed in retrospect to have marked an important and timely step in the establishment of contact between users and producers for the fruitful interchange of ideas. This objective was referred to by Mr. David Eccles, Minister of Works, at the opening ceremony, when he described the finding of better ways by which experts can communicate with each other as the most pressing need on the industrial front. Similar appreciation of the aims of the convention was expressed by Mr. R. A. Riddles, Member of the Railway Executive, in a paper on customers' experience with steel castings. His description of how faulty castings may upset a production programme for locomotives or rolling stock showed the importance of research aimed at guaranteeing the supply of castings free from blow holes, porosity, and similar defects. Indicating useful lines of future development, Mr. Riddles asked for both the weight and cost of castings to be reduced while maintaining the present service. He suggested that simplification of design might sometimes help castings to compete with the cheaper and often lighter components produced by welding which were now becoming a formidable rival to steel castings in the railway field.

### L.M.R. Engine Shed Lighting Improvements

**W**HEN L.M.R. engine sheds fall due for re-roofing and rebuilding, opportunity is being taken to install modern lighting systems for general and local illumination. Pits are being equipped with 5 ft. fluorescent fittings, in a staggered arrangement which provides uniform lighting throughout their length and reduces the need for portable inspection lamps. Work on motion and other details at floor level is facilitated by lighting trolleys of the type illustrated in our March 24, 1951, issue, each carrying one fixed and one adjustable 5 ft. fluorescent tube in reflector fittings. For general lighting an overhead fitting has been designed which is easy to clean and excludes dirt and corrosive fumes. These are being installed when re-roofing of a shed is necessary. So far 25 L.M.R. sheds have been equipped in this way, and 11 others are programmed for similar treatment. A recent depot to receive better lighting in the course of reconstruction is Bescot, the new buildings of which are illustrated on another page in this issue. These developments are in line with the recommendations of recent reports and statements on industrial problems, in the course of which particular reference has been made to the contribution which is being made by modern lighting technique to efficiency, the reduction of fatigue, and safety.

### Electronic Weighbridges

**D**URING recent years the art of weighing has made some rapid advances, due to developments such as weighing by electrical means. One new method, in particular, is the use for this purpose of what are known as "load cells." Such cells in effect are strain gauges mounted on load-sensitive columns, and are capable of giving very accurate weight measurements. Various applications of this principle are now under test on American railways, one being in the construction of weighbridges. The weighbridge is supported on a number of these load cells, which are connected by electric circuits to correlating and recording instruments designed to calibrate and print automatically the weight of each vehicle passing over the bridge. In the case of weighbridges used for the adjustment of locomotive axle-loads, it is a relatively easy matter to build the bridge in sections, with separate load cells under each section. The cells can be adapted for use in a mechanical weighbridge of conventional design, but if a new weighbridge is being installed, a shallower pit than usual will suffice, because of the compactness of the load

cells. According to the purpose for which it is required, therefore, a weighbridge of this type may be designed with a maximum economy in depth, in the weight of steel, and in the number of load cells required.

### Nyasaland Railways New Rolling Stock

**A** MONG orders recently completed by the Gloucester Railway Carriage & Wagon Co. Ltd. is one for first and third class sleeping cars, fourth class passenger carriages and passenger and goods brake vans for the Nyasaland Railways. The stock is generally similar in exterior appearance and has the railways' standard bogies of the equalising beam type, in which improvements have been embodied. The bodies are of all-steel construction and integral design, and considerable attention has been paid to the amenities provided for passengers, which include pressure filters for the drinking water supply in all stock. A feature of the design of both the passenger and goods brake vans is the provision of limited passenger accommodation in the goods brake vans which is similar to that provided in the first class sleepers, while the accommodation in the passenger brake vans is similar to the third class sleeping cars; in each case the passenger accommodation is adjacent to the vestibule entrances. The new rolling stock is described and illustrated elsewhere in this issue.

### Canadian National Railways

**O**PERATING under the new capital structure authorised by legislation last year, the Canadian National Railways emerged at the end of 1952 with its first peacetime surplus since the boom year of 1928. The company's annual report for 1952, signed by Mr. Donald Gordon, Chairman & President, disclosed that at the end of the year's operations a surplus of \$142,327 was available to be paid as a dividend on preferred stock held by the Government of Canada. Mr. Gordon said that the achievement of a surplus had been a "near thing." A wage agreement with seventeen non-operating unions was signed in December, giving retroactive pay increases totalling more than \$9,000,000. The full brunt of this fell on current earnings and would have produced a deficit had there not been a credit to operating expenses of \$3,000,000 resulting from the closing out of a reserve fund for amortisation of defence projects. If settlements with trainmen and firemen, retroactive to last April, had been effected before the end of 1952, a further \$4,500,000 would have been added to the wage bill for the year and a deficit would have resulted.

Once again, operating revenues were the highest in the company's history, totalling \$675,219,415. Expenses rose by 9.4 per cent, from \$580,150,221 to \$634,852,915. As a result, net operating revenue, \$40,366,500, decreased more than \$4,000,000 or nearly 10 per cent below the previous year. Since 1928 the average hourly earnings of Canadian railway employees have more than doubled and the prices of materials have increased over 80 per cent. In contrast, the price of Canadian National freight service, measured by the average revenue per ton mile, has risen by only 38 per cent. The operating ratio has worsened from 82 per cent in 1928 to 94 per cent in 1952. The report states that "were it not for a remarkable increase in efficiency of the railway machine, the financial results for 1952 would have been vastly different."

The volume of freight traffic in 1952, measured in revenue net ton miles, exceeded by 5.5 per cent the record established in 1951. Revenue tonnage amounted to 90,100,000 tons, an increase of less than 1 per cent, but the average haul increased from 407 to 427 miles, so that the total output of ton miles rose to 38.4 billions. As in 1951, the greatest tonnage increases were in low-rated commodities. Grain traffic was up nearly 3,000,000 tons, or 25 per cent, and there were substantial increases in gravel, sand, stone and cement. Heavier movements of crude and fuel oil, petrol, machinery and ores and concentrates were also reported. Pulpwood consignments decreased by more than 1,000,000 tons, or 15.2 per cent; bituminous coal, timber, wood pulp,

paper products other than newsprint, animal products, and motorcars and parts also declined.

Freight rate changes authorised by the Board of Transport Commissioners during 1952 and changes in the composition of freight traffic yielded an increase in the average revenue per ton miles for the system from 1.369 cents to 1.397 cents. Moderate increases in some passenger fares, higher minimum charges for sleeping and parlour car accommodation, and an increase in passenger traffic combined to raise passenger revenues by 2.1 per cent to \$48,466,128. The number of passengers carried rose by 8.7 per cent but as the average journey declined sharply, total passenger miles increased by less than two per cent. The following table compares the principal results for 1952 and 1951:—

	1951	1952
Passenger train-miles	24,412,847	25,533,678
Goods train-miles	48,353,158	49,541,512
	\$	\$
Goods revenue	498,800,344	536,723,241
Passenger revenue	47,475,661	48,466,128
All other operating revenue	78,558,115	90,030,046
Total operating revenue	624,834,120	675,219,415
Operating expenses	580,150,221	634,852,915
Net operating revenue	44,683,899	40,366,500
Taxes, rents, etc.	12,900,780	16,061,052
Interest on public bonds	23,467,703	21,848,906
Government interest	23,347,412	2,314,215
Deficit	15,031,996	—
Surplus	—	142,327

The wage bill increased by \$22,300,000. Increased prices for railway materials were estimated to have added \$11,900,000 to operating expenses.

The most notable feature of the year was the continued improvement in freight train performance resulting from the increased use of diesel locomotives. Freight trains handled more tonnage per train than in any previous year at an average speed equal to the previously recorded peak. These two factors combined to establish a new record of 30,002 gross ton miles per freight train hour. The punctuality of principal passenger trains was better than in any year since 1941. Freight and passenger coach user was maintained at a higher level than in 1951, despite the additional stock acquired and the greater number of coaches on line. The 115 diesel locomotive units placed in service brought the total to 395. By the end of the year the programme for switchers was 20 per cent complete and the programme for road diesels used in through freight service was 34 per cent complete. The programme contemplated for dieselisation of way freight and passenger services was not scheduled to begin in 1952. Visits were made to the United States and Europe by technical officers to study gas-turbine operations and the use of locomotives with mechanical drives. Technological improvements and other economies which might improve the company's competitive position are being watched. Roller bearings were used on freight stock for the first time last year, with the introduction of six 50-ton flat wagons in a special service, conveying road semi-trailers between Montreal and Toronto. The service involves high-speed movement and regularity, justifying the experimental use of roller bearings in spite of their higher initial cost compared with standard journal bearings.

All new passenger-carrying coaches and all air-conditioned dining cars will have roller bearings. Stock selected for modernisation in Canadian National shops will be similarly equipped. Four-wheel instead of six-wheel bogies have been adopted as standard for all new coaches. In addition, wherever practicable, specifications call for single instead of double vestibule coaches, thereby making more passenger accommodation available in each coach.

Centralised traffic control was extended over the 35-mile single track link between Pontiac and Durand, Michigan, on the Grand Trunk Western during the year, bringing mileage worked on the system to 485. C.T.C. is also being installed on the 106-mile single line between Atikokan and Conmee, Ontario, and automatic block signals are being placed on the double track between Conmee and Port Arthur, 36 miles. Automatic block signals are now installed on 185 miles of the main line through the Rocky Mountains. When the programme is completed in 1957, automatic block signals will protect the entire 512 miles of main line from



Jasper, Alberta, to Port Mann, British Columbia, the operating terminal for Vancouver. Conversion of some locomotive repair shops to meet the needs of the diesel programme is in progress. At Moncton and Point St. Charles, portions of the shop space formerly used for steam locomotive repairs are now equipped for heavy maintenance on diesel units and an extension to the electric locomotive shop in Point St. Charles was begun during the year for lighter diesel maintenance. A new diesel shop building is under construction at Fort Erie. Modifications are being made to round houses at Transcona (Winnipeg), Neebing (Fort William), and Campbellton to accommodate diesel locomotives.

Some 282 industrial spur tracks were built during 1952. By the end of the year, 98 per cent of the right-of-way had been cleared for the 150-mile branch being built from Sherridon to Lynn Lake. It is expected that the line will be ready for operation by the end of 1953. Surveys for the 46-mile branch from Terrace to Kitimat, British Columbia, have been completed and contracts awarded for clearing and grading and for the substructure of a bridge over the Skeena River.

### South African Railways & Harbours

**T**he report for the year ended March 31, 1952, of the South African Railways & Harbours, of which Mr. W. H. L. Heckroodt was then General Manager, covers a period which was one of intense activity in all spheres of the department's business. The volume of goods and mineral traffic, particularly bulk commodities, continued to rise rapidly and exceeded the normal rate of increase expected. In the year 1951-52, the railways conveyed 65,169,772 tons of goods, an increase of 3,036,063 tons on the previous year. The number of passengers carried during the year showed an increase of 4.6 per cent, rising from 250,164,799 in 1950-51 to 261,820,463.

No additional main-line locomotives were placed in service during the year. An artisans' go-slow strike also hampered normal working by considerably reducing the output of locomotives in the shops for repair.

Several major planning schemes to improve traffic facilities were reaching a stage where direct benefit would be derived. Electrification of the Cape Western main line was nearing completion, and by the end of 1953 the first electric locomotives ordered for this section would be placed in service.

Details of traffic and financial results appear below:—

	1950-51	1951-52
<b>Railways—</b>		
Passenger journeys ... ..	250,165	261,820
Goods tonnage conveyed ... ..	61,482	64,481
Passenger train-miles ... ..	20,964	21,098
Mixed train-miles ... ..	6,072	5,953
Goods train-miles ... ..	56,624	58,886
Total train-miles ... ..	83,660	85,937
Total ton, miles ... ..	13,404,740	14,209,629
	£ thousands	
Passenger receipts ... ..	14,708	15,340
Parcels and mails receipts ... ..	3,678	3,183
Goods, coal and livestock receipts ... ..	69,095	75,615
Miscellaneous receipts ... ..	4,225	6,485
<b>Total receipts ... ..</b>	<b>91,706</b>	<b>100,623</b>
Working expenses ... ..	54,079	60,185
Depreciation ... ..	5,235	5,641
<b>Total expenditure ... ..</b>	<b>59,314</b>	<b>65,826</b>
Surplus ... ..	32,391	34,797
Interest and other charges (net) ... ..	25,201	29,211
Balance, railways ... ..	7,190	5,586
<b>Harbours—</b>		
Revenue ... ..	6,944	6,446
Expenditure ... ..	3,834	4,341
<b>Steamships—</b>		
Revenue ... ..	413	682
Expenditure ... ..	452	495
<b>Airways and airports—</b>		
Revenue ... ..	3,678	3,940
Expenditure ... ..	4,007	4,236
Surplus on all services ... ..	9,931	7,581
Net revenue appropriations ... ..	1,461	1,211
<b>Surplus on all services ... ..</b>	<b>8,470</b>	<b>6,370</b>

The financial results of working all services during the year, after appropriating from revenue the amount of £1,211,000, representing contributions of £750,000 to the betterment fund and £461,000 towards reducing the

deficiency in the pension and superannuation funds, showed a surplus of revenue over expenditure of £6,370,057. From this surplus £2,870,057 was transferred to the rates equalisation fund, which now stands at £7,369,993.

Some new lines were opened during the year. At Cape Town work was well advanced on the new goods layout estimated to cost £2,684,400; at Durban, work on the new marshalling yard, estimated to cost £1,966,450, was 50 per cent complete. At New Brighton (Port Elizabeth), and Kroonstad (Orange Free State) new marshalling yards were making good progress. The size of the work undertaken during the past seven years in providing new and improved facilities for handling traffic might be judged from the fact that since 1945-46 to 1951-52, £184,591,423 had been expended.

Altogether, 201 new coaches were placed in service during the year, and a total of 3,202 new wagons. Fifty wagons were imported, 1,363 were built by a South African firm, and 1,789 were built in departmental workshops. The sum of £9,390,524 was provided in the estimates for the financial year 1951-52 for new electrification schemes and for the improvement or extension of existing facilities on electrified lines. Included in this amount was provision for the electrification of some 49 miles between Midway and Vereeniging, 103 miles (doubling) between Wattle and Vereeniging, and 33 miles between Rossburgh and Hillcrest.

A loss of £513,161 was sustained in the operation of the road motor services, compared with a loss of £256,797 during the previous year. The increase in revenue for the year of £289,850 resulted from increased traffic, but was offset by an increase in expenditure of £546,214. Harbour revenue fell from £6,807,144 to £6,310,784. Working costs rose from £2,251,014 to £2,581,901, resulting in a surplus of £3,728,883 compared with a surplus of £4,556,130. A net profit of £2,104,539 was reflected in the working results of the harbours compared with one of £3,109,869.

### Gas-Turbine Success on U.S.A. Railways

**A** SIGNIFICANT locomotive development of recent date in the United States has been the order placed by the Union Pacific Railroad with General Electric (U.S.A.) for fifteen additional gas-turbine-electric locomotives. After the first demonstration unit had run experimentally for some time, the U.P.R.R. ordered ten locomotives of this type, four of which have still to be delivered, and it is a tribute to the outstanding success of gas-turbine operation that already the first order has been expanded to a total of twenty-five units, at a total cost of some \$14,000,000.

The General Electric design is of the Bo-Bo-Bo wheel arrangement, 83 ft. long, and is rated at 4,500 h.p. The Union Pacific units already delivered are in service with heavy freight trains over the U.P.R.R. main line between Ogden, Utah, and Green River, Wyoming, a heavily-graded section 176 miles in length. It may be added that the Union Pacific is not neglecting diesel development, as 54 diesel-electric units have been ordered at the same time, 22 of them for passenger work.

A second American gas-turbine-electric locomotive is now in service, and has been working over six different railways since it first took the road on May 3, 1950. Working experience with both locomotives has been put on record in the January, 1953, issue of *Trains & Travel*. This latest gas-turbine unit is the Westinghouse design, also of the Bo-Bo-Bo type, and rated at 4,000 h.p. The tests were first on the lines of the Union of Pittsburgh, Bessemer & Lake Erie, and Pittsburgh & Lake Erie Railroads, where the locomotive was within easy reach, for adjustments or repairs, of the plant at which it was built; but later and more exacting trials have taken place on the Pennsylvania, Missouri-Kansas-Texas, and Chicago & North Western systems. On the Pennsylvania New York-Chicago main line the gas turbine ran mail and parcels trains up to a total weight of 26 bogie vans, and on one test in passenger service worked a train of 1,800 tons (1,610 tons of 2,240 lb.) over the 131 miles of steadily rising gradients from Harrisburg to Altoona in 134 min., equalling the schedule of the considerably lighter "Broadway Limited." In the



first nine months of 1952 the locomotive made 227 trips, totalling 50,000 miles, and experienced no more than three detentions *en route*, none of which was attributable to a failure of the gas turbine or its equipment.

The first test runs were made on distillate fuel, but this was soon changed to "Bunker C" residual oil. A certain amount of teething trouble was experienced, for the proper handling, injection, and burning of the residual oil proved more difficult than with the distillate; also the length of flame on combustion was cut back. But no ash trouble was experienced with the "Bunker C" oil, and in general the gas turbine has behaved very well. On the Chicago & North Western, where the locomotive has been on test with the "Duluth-Superior Limited" and the "Victory" passenger trains over the 205 miles between Chicago and Elroy, Wisconsin, the consumption has been 3,600 gal. for the 409-mile round trip as compared with 1,600 gal. of diesel fuel by a twin-unit diesel of 4,000 h.p. on the same duty. At respective costs of 4.8 and 11.0 cents a gal., this works out at \$172.80 for the gas turbine and \$176 for the diesel. It is expected that maintenance costs will be less for the former than for the latter, but availability and reliability of the gas turbine unit over a long period have yet to be proved. One considerable advantage of the gas turbine over the diesel is in lubricating oil consumption; with the diesel, the cost of lubricant averages from 5 to 7 per cent that of the fuel oil consumed, whereas with the gas turbine unit lubricating costs are negligible.

With modifications dictated by experience, the builder has increased by five times, since the first trials, the life of the combustors in which the fuel is burned. By drawing in the air for combustion through the roof of the unit, where the supply is cleanest, it has been found that no filters are needed; there have been no compressor troubles due to dirty air, and filter maintenance has been eliminated. A valuable economy has been effected in working passenger trains by using part of the exhaust from the gas turbine to provide steam for train heating instead of using the customary oil-fired steam generator. The unusual 4-4-4-4 wheel arrangement has been found to possess satisfactory tracking properties at all speeds. There is no objectionable high level of noise when the locomotive is in service.

The labour and cost entailed in developing a new type of motive power are evident from the fact that the Westinghouse Company spent three years and roughly \$2,000,000 in money before its first gas-turbine-electric locomotive entered service. But the experience gained, particularly in the operation of the locomotive in special conditions, such as tunnels, terminals, yards, shops, and in bad weather, has been valuable. It has also been found possible to simplify the control equipment in various ways.

### Proposals for European Signal Aspects

**A**LTHOUGH the main general principles of signalling necessarily had to be the same on all railways of any importance, the means by which they were put into effect differed appreciably from one country to another. In Europe alone considerable differences of practice arose and even in one country, especially where railways were in private ownership, different operating methods were to be seen. Occasionally, to a limited extent, there were differences of principle such as, for example, whether the block working should be "normally clear" or "normally blocked" and, if "normally clear," whether the signals should stand normally "off" or "on."

In the realm of signal aspects also great differences came into existence, often reflecting the ruling thought in the minds of the creators of a particular system. In France, for instance, many classes of fixed signal were—and are still—seen, the result of a desire to convey several variations of instructions to drivers by distinct aspects, considered elsewhere to be of much less importance. On the other hand, in Germany a few simple aspects sufficed to meet the needs of more rigid methods of traffic working. These differences between the countries were not of much consequence, for there was little interrunning, and

where it did take place pilot drivers were carried to observe the signals and assist the regular drivers. In any case, difference of signal aspects was only one of the difficulties to be faced when organising such services and perhaps not the hardest to overcome. Sometimes, where a railway itself penetrated into another country, as in effect with the Nord-Belge line, its own signalling would be in force therein, giving in this instance French (Nord type) signalling in Belgium.

The advantages to be gained from instituting more through services and eliminating delays and formalities at frontiers have again directed attention of recent years to this question of differences in signalling and prompted further discussion of a suggestion, first advanced many years ago, that an attempt should be made to produce a common system of signal aspects for all European railways, at least for ordinary main lines. Dr. A. Dobmaier, until recently Chief of the Signal Department of the German Federal Railway, put forward proposals to this effect a year or two ago, and in a recent special number of our contemporary *Eisenbahn Technische Rundschau* Herr Otto Wolf has developed the theme with the aid of a series of coloured comparative diagrams in which the different aspects in use in Europe with light signals, as well as his own suggestions for arriving at one uniform scheme applicable to all conditions, are set out in detail. To accomplish anything of this nature, light signalling has to be pre-supposed, as any harmonising of what may be called signals of form or shape—discs, semaphores, etc.—would be impracticable at this stage, even if it could ever have been effected.

Herr Wolf's requirements for a European system may be expressed briefly as follows. Signals should be capable of showing first of all, of course, whether the section of line in advance is occupied or not and the maximum speed with which such section may be traversed and then what message is to be expected at the next signal, preferably whether it calls for a stop to be made, or authorises the driver to proceed and at what speed. Indication of the actual route to be taken should be given when absolutely necessary and the system arranged so that it can meet occasional special conditions without departing from its governing principles. The red, yellow and green system of lights should now, Herr Wolf considers, be everywhere accepted and special approach indications such as flashing green and white (Sweden) and flashing red (Portugal) abandoned. Red should not be seen in any proceed aspect, in order that all indications met with may be considered psychologically correct. While capable of being used in multiple-aspect areas they should be equally satisfactory elsewhere. Means of denoting unmistakably that a warning aspect is located at less than braking distance from the red indication ought to be provided and it is desirable also, Herr Wolf considers, that the speed indications at facing points should be able to cover both ordinary and special large radius turnouts. Wherever possible aspects should consist of a single light.

These proposals are expressly stated to be advanced merely as a basis for discussion and in no sense as a final solution of a difficult problem. The chief feature likely to render them not readily acceptable in some countries is, we think, the use of flashing lights, not for an occasional special or subsidiary aspect, such as calling-on, but for regular running indications. Although a few countries have long been accustomed to using such lights those who have never had them probably would feel a very natural dislike to having to introduce the special devices necessary to give this additional feature. Herr Wolf stresses rightly that if anything of this nature is to be effected the present is the time to begin to establish what forms it should take, while the proportion of light signals to other types is still relatively quite small, as every extension of existing arrangements must make eventual unification more difficult and costly. As signal aspects are emphatically one of those matters in which each railway and country greatly prefers its own fancies and practice and almost instinctively dislikes making any change, we feel it is not going to be easy for these new suggestions to find a sympathetic hearing. Appreciable practical difficulties also would remain to be overcome even were agreement to be reached in theory.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### Open or Compartment Coaches

April 12

SIR,—The editorial note in your April 10 issue says that passengers are prepared to pay extra for riding in open stock such as Pullmans and that of the prewar British streamliners. What they are willing to pay for in Pullman cars is the superior service; the four-seater compartments in first class Pullmans are popular. Parties may prefer open stock; but most British travellers prefer compartments, which ensure control of ventilation and give freedom from draughts and nuisances such as ill-behaved children.

The first class compartment in a modern British or Irish ordinary side corridor coach probably is the most comfortable accommodation in any public vehicle for day travel in a temperate climate.

Yours faithfully,

PAUL STANTON

10, Victoria Road, Kensington, W.8

### Isle of Wight Railways

March 29

SIR,—We are assured that the Isle of Wight railways are being closed because "they do not pay." We are told that each line is carefully investigated to decide whether closure is necessary. However, it is pertinent to ask whether, with a little initiative on the part of the Railway Executive, these lines could be put on a paying basis.

Dieselisation, as suggested by your correspondents, is no solution. There must be the continual near-capacity use of such a form of motive power to justify the high initial capital costs. These conditions do not apply on the island, except at the holiday season. During the rest of the year, there would be considerable high-cost capacity idle, and that which remained in use would have to bear the burden of earning the necessary return to capital.

The solution lies elsewhere. The Isle of Wight railways are an economic unit on their own, and should be operated on that basis. The chief need is for there to be given to the island system complete freedom to charge competitively for its services. Local autonomy is required, so that those on the spot can be allowed to use their discretion to best advantage.

Alternatively, why not offer the island system for sale to private enterprise? Soon we shall have an excellent precedent when the larger part of the assets of the Road Haulage Executive are dispersed to competitive entrepreneurs. There is no question that such a company would deal awkwardly with the nationalised railways, which would bring much traffic to its very doorstep. Yet a private company would have a glorious freedom to do just what it felt necessary to ensure that the island lines fulfil their real need.

Yours faithfully,

A. R. BROWN

88, Woodlands Road, Isleworth

April 6

SIR,—A correspondent in your March 27 issue suggests diesel railcars for the Isle of Wight Railways. He overlooks the problem of meeting the traffic peaks at weekends in the summer. Diesel locomotives, on the other hand, could be used on shunting at Southampton and elsewhere during the winter, and would allow the length of train to be varied. Diesel locomotives designed primarily for shunting are hauling suburban passenger trains in New Zealand.

As regards closing the Bembridge branch before rather than after the summer traffic, probably the reason is shortage of engines, because during the summer more engines

will be needed on the other more remunerative routes. No new engines or rolling stock designed for branch line services have been built for use in Britain since before the war; and this shortage, as well as pending renewals of track, may have a bearing on decisions to close branches. This is largely a problem of restricted expenditure; one cannot blame the Railway Executive for confining such money as it is allowed to spend to renewals of the more remunerative main lines.

The elderly Adams tank engines must be among the cleanest and best-kept in the country. They may not be the most efficient, but they are attractive. But the elderly rolling stock, with somewhat hard seats and small windows, even though kept clean, will not attract the tourist away from the motorcoaches. Could the modern, mass-produced motorcoach body be mounted on existing railway underframes, with still a lease of life to run? It should be possible to adapt for length by joining two or more sections.

Is there a compromise solution for the branch lines serving holiday resorts so that they might be opened for traffic for the holiday season each year? Some pooling of receipts with the bus operators, or financial support from the local councils concerned might be necessary. There is precedent for a summer service only in the Vale of Rheidol line of the Western Region, and the Windermere-Lake Side branch of the L.M.R. In the Isle of Wight the Southern Vectis Omnibus Co. Ltd. will be faced, if the railways are closed, with providing buses and staff for the holiday traffic, which it will not be able to use at other periods, and bus fares will be likely to rise as a result. Seasonal railway branch services could be staffed by personnel transferred from the industrial areas, housed in camp coaches. Many of them would welcome such an opportunity.

Yours faithfully,

R. G. R. CALVERT

10, Bolton Avenue, Windsor

### Squirrel-Cage Motors for Traction

March 24

SIR,—In connection with the French National Railways project for locomotives with 3-phase squirrel-cage motors (reported in your October 31, 1952, issue), it may be pointed out that during the last war Ganz constructed for the Hungarian State Railways two 4,000 h.p. 2-Do-2 locomotives fitted with Sécheron-Meyfarth drive, Kandó phase converter, asynchronous frequency changer, and four 4-pole, 1,000 h.p., three-phase squirrel cage traction motors. One of the locomotives was completed and underwent successful service tests; the other was nearly completed, and then both locomotives were extensively damaged by acts of war.

The 4-pole frequency-changer was driven by a pole-change asynchronous slip-ring motor having 6 and 12 poles in an "improved Dahlander connection" of Ganz. The frequency-changer set had two economic speeds, 1,000 and 500 r.p.m., in each direction, enabling the squirrel-cage traction motors to run on five economic frequencies, 16⅔, 33⅓, 50, 66⅔, and 83⅓ cycles. Intermediate frequencies, giving smooth speed regulation, were available by using the water rheostat connected in the rotor circuit of the frequency change motor. The stators of both the frequency-changer and its driving motor were fed from the Kandó phase converter.

The squirrel-cage traction motors thus had five economic (synchronous) speeds—500, 1,000, 1,500, 2,000 and 2,500 r.p.m., with smooth transition between them.

Yours faithfully,

S. A. VINCZE

73, Karepa Street, Wellington, New Zealand

## THE SCRAP HEAP

### Time to Stand and Stare

The "Titfield Thunderbolt" has not created a precedent by interrupting a cricket match. . . . The cricket field at Great Missenden has a railway embankment as one of its boundaries and whenever a train passes the batsmen relax and the umpires and fielders stand with hands in pockets until the train has disappeared from view. All this even in the middle of an over.—*From a letter to "The Evening News."*

### Taking a Broad View

After glancing at the glowing prospectus of the Atchison, Topeka & Santa Fe Railroad, we found ourself wondering why it is that with the almost limitless scenic opportunities they have the railways in Scotland show so little imagination. Very little is done, as far as we can make out, to link methods of rail travel with our wonderful countryside. . . . *Prima facie* it seems perfectly possible to run vista-dome coaches through the Highlands. The Americans find that this method of railway travel through regions of magnificent scenery is attractive. One would imagine that tourists on the Inverness-Kyle of Lochalsh route, for instance, or on the Fort William-Mallaig run, would gladly pay a supplementary charge to sit in a double-decked coach admiring the scenery through glass walls and roofs.—*From "The Scotsman."*

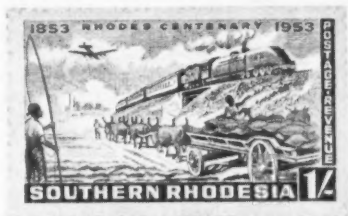
### N.E. Region Coronation Schemes

The North Eastern Region has selected sixteen stations for decorative treatment at the Coronation. They are: Bradford Forster Square and Exchange, Darlington Bank Top, Durham, Harrogate, Huddersfield, Hull Paragon, Leeds City and Central, Middlesbrough, Newcastle Central, Scarborough Central, Stockton, Sunderland, and York. An artist's impression of the scheme for Huddersfield is reproduced below. Here, as at Leeds

City, the station forms one side of a city square and careful consideration had to be given to ensuring that the railway decorations and those of the civic authorities would harmonise. Bulbs and young plants specially purchased for floral displays at all stations where conditions are suitable are being brought on in the Civil Engineer's nurseries in the care of the various district engineers. The Public Relations & Publicity Officer has been responsible for designing and devising all the schemes of decoration.

### Beyer-Garratt Locomotive on Centenary Stamp

A testimonial to the part played by railways in the development of Rhodesia is contained in the Rhodes Centenary stamp just issued, and illustrated below. The choice of a Beyer-Garratt locomotive to symbolise modern rail



haulage in Rhodesia is particularly appropriate in view of the various classes of this type used on the Rhodesia Railways system since 1925, and the recent order for 30 Beyer-Garratts of greater power than their forerunners to handle the still expanding traffic.

### East African Station Names

Not the least interesting of the tasks in connection with the building of new stations is the selection of appropriate names. Sometimes the name is an automatic choice as when a station is built

near a township or prominent geographical feature, but not infrequently stations which are required for purely operating purposes are sited in remote country. When this happens it is not an easy matter to find a suitable name for the station.

In Kenya, with the guidance of the Standing Committee on Geographical Names—sponsored by the Director of Surveys—names were recommended recently for sixteen new stations shortly to be built. Some of them will be built in featureless country and their naming presented a problem. One between Broderick Falls and Bungoma is to be called Sudi, the name of a well-known local Chief; another between Darajani and Mtito Andei will be named Kathekani, which is Kamba for "in the bush"; and a station to be built between Kiboko and Makindu (the name of which has not yet been finally decided) may commemorate an incident which occurred near Kiboko in 1910 when Mr. Abdul Hamid Khan, Permanent Way Inspector, succeeded in killing a leopard which attacked him.—*From the "Staff Magazine" of the East African Railways & Harbours.*

### The Tale of a Tie

I was wandering round the station on a sunny spring-time day, Absorbing local colour in my amiable way, When suddenly I saw, out of the corner of my eye, A porter promenading, with a little bow tie.

Red ties were once *de rigueur*, but now they're never seen, They've been replaced by blue or green, or something in between, But even this sad laxity affords no reason why Tradition should be flouted by a little bow tie.

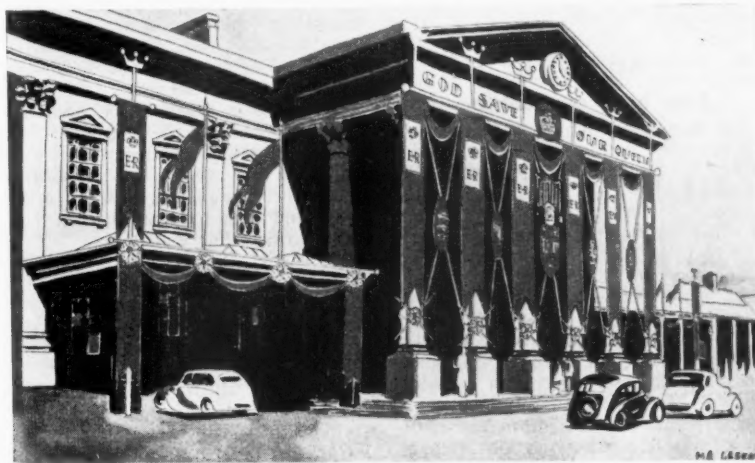
The stately station shuddered, blushed brick-red and shed a tear And, unless I'm much mistaken, there'll be ructions around here, For I'm sure the stationmaster will regard with baleful eye That temerarious porter with his little bow tie.

He'll probably express himself with vigour and at length, He'll call on whatsoever gods there be to give him strength And, with piquant oburgations, call down lightning from the sky To obliterate that porter and his little bow tie.

Since folly is contagious, it might some day be your lot To find yourself entangled in some "extra-legal" spot: Just fancy how you'd feel, then, to be landed high and dry By some heavy-handed copper with a little bow tie!

A. B.

E 2



Decorative scheme for Huddersfield Station, North Eastern Region, during the Coronation period



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### INDIA

#### Tezpur-Balipara Railway Absorbed

The North Eastern Railway has absorbed the Tezpur-Balipara Railway in Assam. This 20-mile 2-ft. 6-in. gauge line conveys much tea traffic from gardens to Tezpur, on the north bank of the Brahmaputra, whence it is shipped to Calcutta. In addition it connects at Rangapara North with the Rangapara-Rangiya branch of the North Eastern Railway; Rangiya is on the Parbatipur-Amingaon line of the metre-gauge section of the former Eastern Bengal (later Bengal Assam) Railway.

The headquarters of the T.B.R. are at Tezpur, and rolling stock recently consisted of 5 locomotives, 19 passenger vehicles, 4 break vans, and some 90 wagons.

### CANADA

#### Pacific Great Eastern Extension

The Premier of British Columbia has told the Legislature that he is determined to extend the Pacific Great Eastern Railway southwards to Vancouver and northwards from Prince George to the Peace River. He is seeking the co-operation of Alberta, in which part of the Peace River country lies, and the Federal Government. It is aimed ultimately that the line shall extend from Vancouver northward to Peace River, thence eastward across the northern parts of the prairie provinces to Hudson Bay.

#### C.P.R. Railcar Experiment

An 85-ft. Budd diesel-hydraulic railcar has been under trial by the Canadian Pacific Railway on the 164-mile line from Montreal to Mont Laurier. It was a severe test, as this line has 1 in 45 gradients, 8½-ch. curves, and, in winter, much snow and very low temperatures. The car ran on a schedule 2 hr. shorter than the 6 hr. or more allowed the steam-hauled passenger trains, and proved itself able to withstand the worst possible weather conditions. As the first service of the day, it found no difficulty in ploughing its way through drifts of snow which had accumulated overnight. Passengers on the branch were asked to record their opinion of the new type of service, and the response was enthusiastic. With the help also of advertising, radio, and television, the car trebled ticket sales on the line during the five weeks in which it was at work.

### UNITED STATES

#### Large Diesel Locomotive Orders

Of orders recently placed for diesel locomotives the largest is that of the Chicago & North Western, for 101 units; eleven will be 2,250 h.p. units for passenger service, 69 combined road-shunters of 1,200 to 1,600 h.p., and the remainder yard-shunters. The Atchison,

Topeka & Santa Fe has ordered 97 units, of types not yet specified. The Chesapeake & Ohio, which has completed the work of dieselisation started before acquisition by its Pere Marquette subsidiary, is now extending the use of diesel power to the parent system, and for this purpose is buying another 45 units. The Great Northern Railway is buying 37 further units, 16 of them assembled into quadruple-unit locomotives of 6,000 h.p. Orders for diesels placed during February alone total 337 units.

#### Union Pacific Dome Cars

Following the general trend, the Union Pacific Railroad, which has some highly scenic main lines through the Rockies, has included among recent orders for 65 new coaches 15 with upper deck "dome" compartments. Five of these will combine dining accommodation with the domes; five will be observation cars for first class passengers; and five will be for the use of coach passengers. These will be the first dome cars to run on Union Pacific.

#### Diesels to Replace Electric

An unusual development is to take place on the New York, New Haven & Hartford Railroad. Part of its electric system, connecting with the electrified New York-New Haven section of the main line, is the 24-mile branch from South Norwalk, Connecticut, to Danbury. The New Haven intends to remove the overhead catenary, and in view of the extent of its diesel-electric operation, to substitute diesel power for the present electric multiple-unit trains. Another New Haven plan, in the interests of economy, is to close down its Cos Cob electric power-station in Connecticut, which is in need of modernisation, and instead to buy electric power from outside companies.

### MEXICO

#### Loan for Pacific Railroad

The Bank of America, with guarantees provided by the semi-official credit agency Nacional Financiera, has granted a \$5,000,000 loan to the Pacific Railroad to finance part of its reconstruction programme. The money will be used to buy wagons, coaches, machinery and other essential items. Some \$3,500,000 will be spent on new rails.

Nacional Financiera on its own behalf has granted a loan of 5,000,000 pesos for the installation of a creosote plant at Mazatlan or another strategic Pacific point; and for improvement of the railway telecommunications system.

#### Delivery of French-built Coaches

The National Railways have received six of the 50 standard first-class coaches

under construction in France. The coaches, with a capacity of 80, are air-conditioned and have double windows. They are finished in red and grey externally. Seats and backs are air-foam cushioned. Above each seat is a ventilation control unit.

Delivery of all the stock is expected by June. It is to be placed into service between Mexico City and Laredo and Mexico City and Guadalajara.

#### Yucatán Railways Report

A full report on the United Railways of Yucatán (Ferrocarriles Unidos de Yucatán) has been prepared by Senator Bravo, General Secretary of the Union of Railway Workers of the Mexican Republic.

The total assets of the railway have been estimated at approximately 127,000,000 pesos (\$14,698,900) with liabilities of only 17,000,000 pesos (\$1,967,500). Senator Bravo points out that the railway lacks sufficient materials and rolling stock to be run efficiently for the benefit of the economic life of Yucatán. He asks for immediate financial aid for its total modernisation, including the acquisition of new motive power, and passenger and freight stock, and widening of the gauge of the Merida-Campeche line.

### BRAZIL

#### Conference of Chief Officers

A conference of chief railway officers, which closed on March 20, adopted a number of resolutions. In accordance with the Brazil-U.S. Commission's recommendations it was of opinion that steam traction should be maintained on the Bahia-Minas, Nazare, Ilheus-Conquista, Goiás, Tereza Cristina and Santa Catarina lines, and also on the Madeira-Mamore, Bragança and Tosantins lines, because of the abundance of wood available for fuel. Diesel-electrics should replace steam on the Central de Piauí, Viçosa Cearense, Mossoro, Nordeste, Leste Brasileira, Leopoldina, Central Sorocabana, Mogiana, and Araraquara systems, and should be used exclusively on the Sampaio Correa Railway because of lack of water in the district and as oil may be obtained from the Mataripe refinery at Bahia.

The partial use of diesels on the following lines should receive further study, with consideration of the circumstances peculiar to each: São Luiz-Terezina, which has access to plentiful supplies of wood; Rêde Mineira de Viçosa, of which electrification is planned and should be carried out; Noroeste do Brasil, where after conversion of the track to broad gauge, steam locomotives freed from other lines might be used; Parana-Santa Catarina (which should burn Parana coal, the best in Brazil); Rio Grande do Sul (of

which the principal sections are to be electrified).

The Railway Research Institute is to be asked to study the practicability of electrifying the Cearense, Nordeste and Leste Brasileira system, using single-phase current at 21,000 volts to be taken from Sao Francisco power station, and the possibility of the Rio Grande do Sul Railway receiving power from the central thermal stations at Candiota and Sao Jeronimo. Estimates of cost are to be drawn up for improving existing steam locomotives in the repair shops of each system by firms of recognised ability, according to details supplied by the Commission.

## ITALY

### Franco-Crosti Boilers

The State Railways have continued to equip steam locomotives with Franco-Crosti boilers, with considerable resultant economy in fuel. It is understood that this has been reboiling, as building of new steam locomotives for the remaining steam lines has been discontinued because of electrification.

### New Tunnel on Simplon Line

The second track in the new Rio Redo Tunnel between Preglia and Varzo, on the Italian State Railways main line between the frontier station of Domodossola and the Italian portal of the Simplon Tunnel, was placed in service in March. Construction of the new tunnel, as mentioned in our February 6 issue, was necessitated by

the many landslides, culminating in the serious slide in November, 1951, which blocked both tracks for some weeks. The line between Domodossola and Brigue (at the Swiss end of the Simplon Tunnel) normally is worked by the Swiss Federal Railways.

## IRELAND

### G.N.R.(I.) Bill

The Bill for the joint acquisition of the G.N.R.(I.) by the Republic and Northern Ireland passed its second reading in the Dail on April 15. The Minister for Industry & Commerce said that the Bill was not the result of any desire to extend the interests of the Governments in railway undertakings, but was forced on them by the circumstances in which the company found itself.

One deputy said that the only satisfactory solution of the problem of the G.N.R.(I.) and the Republic's transport problems in general was to combine the G.N.R.(I.) and C.I.E. into one national transport authority, but this solution was not acceptable to the Government of Northern Ireland. The unity of the G.N.R. was not being impaired by the Bill.

The titular ownership of the G.N.R. moveable assets would be vested in Northern Ireland in the U.T.A. and in the Republic in the Ministry for Industry & Commerce, but under the Bill they would be reserved exclusively for the use of the G.N.R. They could have introduced C.I.E. as the Minister's agent here, but decided not to do so, as it was

considered that that company had sufficient responsibilities already. The Minister stated that however beneficial or desirable a single unit for the whole country would be, it was not practical politics, and the solution of the G.N.R. problem had to be attempted on its own.

The Committee stage of the Bill was fixed for April 29.

## SWITZERLAND

### "Europ" Convention Signed

On March 2 a convention relating to the Europ wagon-pool was signed at Berne by representatives of the Austrian, Belgian, Danish, French, (West) German, Italian, Luxembourg, Netherlands, Saar, and Swiss Governments.

The success of the Franco-German wagon pooling agreement of 1951 in reducing empty wagon movement led the International Union of Railways to institute study of extension of the agreement to other railways on the basis of the R.I.V. convention. At various meetings under Swiss Federal Railways chairmanship various Western European railway administrations have drawn up the new convention for the pooling and common user of 160,000 goods wagons whose number may be further increased.

The wagons incorporated in the pool will bear the sign "Europ." Control will be by the Bureau des Wagons Europ situated at Berne, which was opened on March 15; one or two representatives of each administration are members. A commission will supervise compliance with the convention.

## Publications Received

*Fünfzig Jahre S.B.B.* (Swiss Federal Railways Jubilee). Berne, Switzerland: A. G. Berner Tagblatt. 12½ in. × 9½ in. 150 pp. Fully illustrated. No price stated.—This souvenir publication commemorating the formation of the Swiss Federal Railways in 1902 contains articles by departmental officers of the S.F.R. on subjects such as bridging, electrification, rolling stock, signalling, mechanical freight handling, lake steamer services, and other activities. The many half-tone illustrations, most of them entirely new, depict a wide variety of subjects on the S.F.R. and are well chosen and reproduced.

*A History of Civil Engineering*, translated by E. Rockwell from the original German, *Die Geschichte der Bauingenieurkunst* by Hans Straub. London: Leonard Hill Limited, 9 Eden Street, N.W.1. 258 pp. 9 in. × 6 in. Illustrated. Price 25s.—This book, though addressed to students, practising engineers and laymen, is intended primarily to assist the former in viewing civil engineering against a broader historical background of science and art. To give the layman a general insight into the world of engineering, the text is written in a popular vein. It opens with a review of the technical knowledge possessed by civilisations in the Nile

Valley and Mesopotamia, 3,000 and 2,000 years B.C., and the remarkable canals and structures of those times. It then treats the Greek and Roman eras with their famous buildings, roads and bridges, and describes the ship and harbour construction of the ancient world. The story is traced through the Middle Ages to modern times showing how the gradual development from the exact science of mechanics on the one hand and the creative craft of building on the other has continued, eventually leading to the modern technique of construction.

*Open Air London*.—A survey of every beauty spot in Greater London from the Chilterns to the North Downs is made in "Open Air London," a 56-page guide-book issued jointly by the London County Council and London Transport and priced at 3s. 6d. The L.C.C. and London Transport, with the co-operation of local authorities, the National Trust, and other owners, have compiled information on between 400 and 500 London open spaces. About 150 of them are described in detail and many are illustrated.

*Through All Europe by Train*.—Edited by the C.I.C.E. (Centre d'Information des Chemins de Fer Européens), Rome, and distributed free by European railway offices.—The purpose of this 60-

page abstract of international passenger train services and connections in the 1953 summer timetable is stated to be indication of "the best railroad routes connecting the capitals of Europe." Use is made of conventional timetable signs, including that familiar in air timetables, of Arabic numerals for days of the week—with Sunday misleadingly shown as (7). Whilst the conception is good, the timetable suffers from oversimplification, as for instance in its failure to show good connections when more than one change is involved. It would seem to offer too much detail to the traveller who has not yet reached Europe, and too little to the travel agent, who indeed has many other more comprehensive publications at his disposal.

*Treatment with Aluminium Paint*.—An illustrated booklet has recently been issued by the British Aluminium Co. Ltd. which deals with the subject of aluminium paint in paste form, and includes such subjects as the general characteristics of this form of aluminium paint, its application, method of storage, and testing. A table showing recommended systems for painting interior and exterior steel work, brick, plaster, concrete, and so on is also included, with specific priming coats, the number of finishing coats, vehicle to be used, and method of application.

## Railways in Eastern Germany

*Reorganisation, and political and material difficulties in operation of the State railways in the German Democratic Republic*

(From a Correspondent)

UP-TO-DATE information on the railways of the German Democratic Republic, into which the Russian Zone was formed in 1949, is not easily obtainable. There is virtually only the one system, still called the Reichsbahn, as against the Deutsche Bundesbahn of the Federal Republic (Western Germany). On April 1, 1949, all other railways, both standard and narrow gauge, whether privately owned or the property of local authorities, were expropriated and taken over by the Reichsbahn, though a few concerns that had proved unremunerative were later handed back to their former owners. The Reichsbahn is quite separate from the Bundesbahn, with which latter, however, it exchanges traffic; and it is responsible for all main-line railways in Berlin, including the S-bahn (electrified portions of the Reichsbahn), but not the Berlin Underground. The complexity of operating in and around Berlin arising from the present political boundaries was discussed in an article in *The Railway Gazette* of August 8, 1952.

### Postwar Reorganisation

On occupying their zone of Germany in 1945, the Russian military authorities found the Reichsbahn general management in Berlin (which had been responsible for the whole of the Reichsbahn in Germany and since annexation in 1938 and 1939 respectively for the railways of Austria and Czechoslovakia) and eight *Reichsbahndirektionen* (R.B.Ds.) or divisional managements responsible for railways in the territories forming the Russian Occupation Zone, namely, Brandenburg, Mecklenburg, Saxony, Saxony-Anhalt, and Thuringia; these eight R.B.Ds. were: Berlin, Cottbus, Dresden, Erfurt, Greifswald, Halle, Magdeburg, and Schwerin. The R.B.Ds. at Breslau, Frankfurt/Oder, Königsberg, Oppeln, and Stettin were dissolved as the territories they served were placed under Polish control.

According to a publication of the S.D.P. (Social Democratic Party in the Federal Republic), senior officers of the Reichsbahn are selected from the Communist Party. This and the fact of Russian occupation led to adoption in the early stages of new operating and other methods, some introduced from U.S.S.R., in place of long-established Reichsbahn practice; in many cases it became necessary to revert to the old methods. Reorganisation often was accompanied by political staff purges.

The Reichsbahn in the German Democratic Republic is ultimately the responsibility of the Minister of Transport, who theoretically answers to the *Volkskammer* ("People's Chamber")

and to the Communist Party, though *de facto* control is stated to be exercised by Russian officials attached to all departments of the Ministry. The *Generaldirektion* of the Reichsbahn comprises a board of management consisting of the General Manager (*Generaldirektor*), his deputy, the *Wirtschaftsdirektor* (responsible for financial and commercial matters generally), a *Kulturdirektor*, and a Communist Party Secretary. The General Manager is reported to be much restricted in the scope of his decisions. Russian officials are attached to all departments of the *Generaldirektion*. The R.B.Ds. are similarly organised, and at lower administrative levels something of the same tendency is visible. Office staff is stated to have been increased by 17 per cent. Fewer Russians are apparent than in the early days of the occupation and during dismantling.

### Rolling Stock Shortages

Since the separation of the Reichsbahn in Eastern Germany from the rest of the German railways, the demand for empties is said to have been 30-50 per cent higher than the amount of wagons available, largely because of the demands of the occupation authorities, and the return of wagons to the Federal Railways (Western Germany) also has been affected at times. Stock generally, and especially covered wagons, is stated to be in poor condition. Repairs and maintenance are the responsibility of the newly formed *Zentrale Wagenverwaltung* (Central Wagon Office) in Berlin.

Passenger stock tends to be over age, maintenance and renewals being hampered by lack of materials. The shortage of coaching stock for long-distance trains is marked. The programme for 1952 provided for 2,800 vehicles, but there are doubts whether it was implemented. Much stock has been withdrawn from normal service to act as propaganda vehicles.

Receipts since 1945 have been considered as a source of reparations to U.S.S.R., and the expenses of dismantling have been heavy. All double-track lines have been singled and many single lines taken up. Much rolling stock, including electric locomotives, mechanical workshop equipment, track, electrical, signalling, and telecommunication equipment—the latter including much of the Reichsbahn "Basa" telephone network—has been sent east as restitution material.

Absence in the Democratic Republic of bituminous coal has involved use of brown coal for locomotives, with consequent difficulty in steaming and heavy payments in damages for fire in line-side properties arising from sparks, and

considerable cinder nuisance. Recently, bituminous coal has been obtained from Silesia and supplied to the locomotives of main-line trains.

Tests have been conducted with a view to increasing the load of goods trains on certain lines, notably between Berlin and Halle and Magdeburg. It is proposed to operate goods trains of over 3,000 tons.

**MORGANITE CARBON PRODUCTS AT THE B.I.F.**—Many products of interest to engineers, technicians, foundrymen, furnace designers, and others will be shown by the Morgan Crucible Co. Ltd. at the British Industries Fair, Castle Bromwich. Among examples of interest to the railway industry will be Morganite carbon pantographs, crane current collectors, and brushes, brush-holders, brush bedding, and commutator grinding stones for electrical machines of all capacities.

**B.E.T. EXPRESS COACH FLEET ACQUISITION.**—The British Electric Traction Co. Ltd. has acquired Neath & Cardiff Luxury Coaches Limited, a company with a fleet of over 30 vehicles operating express services in South Wales. Colonel Sir Godfrey Llewellyn, the founder of the business, remains on the reconstituted board, which includes also Mr. W. T. James, Sir Robert Gould, and Mr. T. R. Williams. The management remains unchanged.

**BRITISH OXYGEN COMPANY'S EXHIBITS AT B.I.F.**—At the British Industries Fair at Castle Bromwich the British Oxygen Co. Ltd. will show the Argonaut welding process for the first time. This is an automatic welding process using an inert gas shielded arc with a consumable electrode. It has great scope for all-position welding on heavy gauge aluminium plate and light alloys. It can also be used on stainless steel and copper base alloys. No flux is needed and welds are of good quality free from slags and inclusions. The new Argonarc spot welding equipment suitable for spot welding stainless and bright mild steels, will be demonstrated. The standard Argonarc process equipment on display will include the Mark II and III torches and equipment, the water cooled shield for use on the Mark III torch for continuous heavy duty work, motor generators and composite power units. The range of cutting and welding blowpipes to be shown will cover all requirements in this field. The Cutogen 5 is of particular interest, as it may be fitted with various heads and nozzles which make it suitable for hole piercing, rivet washing, gouging, powder cutting (for stainless steel) and powder washing (high-speed fettling of castings) in addition to straightforward cutting operations. Demonstrations will be given on the 55-in. universal cutting machine fitted with the new MC 12 cutter and the 36-in. machine both using the Cutogen one-piece nozzles. There will also be a complete range of ancillary equipment and welding materials for all fabrication and repair work.



## A New Design of Wagon Tippler

*Absence of clamping mechanism  
decreases time of operation*

A NEW wagon tippler designed to Railway Clearing House standards has recently been completed by the Fraser & Chalmers Engineering Works of the G.E.C. Fully automatic in tipping operation, the machine is designed to handle wagons up to the standard Ministry of Transport pattern of 24½ tons capacity but will deal with smaller wagons down to 8 tons capacity.

The important feature of the tippler is that no clamping mechanism is necessary, consequently the time cycle of operation is decreased. A further refinement is the provision of an adjustable side bolster beam for which a patent has been applied. It should be noted that the present railway regulations give two different heights for the side bolster beam, dependent upon the range of wagons being handled. Thus for wagons from 6 ft. 6 in. to 8 ft. 6 in. high above rail level, one height is specified, while for wagons within the range of 8 ft. to 10 ft. 6 in. a different height is required.

The difference between these two heights is 1 ft. and this is the range of movement of the adjustable side bolster beam, a feature which enables the full range of wagons from 6 ft. 6 in. to 10 ft. 6 in. high above rail level, to be handled in one machine. It is understood that no tippler has previously been put forward capable of handling such a wide range.

### Design and Operation

The tippler cradle on which the wagon is placed rests upon solid foundations in its normal position so that the tippler and ropes are not stressed by through traffic. The cradle is pivoted to cradle arms by pins slightly eccentric so that the natural tilt brings the wagon against side bolster cushions during the early part of the operating cycle. This tilting tendency is controlled by two cam faces attached to the hopper side of the cradle and rest on cradle tilting rollers attached to the foundations.

The side bolster cushions are pivoted and so arranged that they are aligned automatically to the side of the wagon, so allowing for wagons of varying widths and angle of side. The rolling arms are bored out at their lower ends to fit the pivot pins attached to the cradle arms, while the faces of the rolling arms rest upon and roll along rolling paths. Registration ropes are fitted to locate the rolling arms relative to the rolling paths. These ropes are attached one end to the rolling arms and the other end to the rolling paths.

Between the two rolling arms is a top bolster supporting girder attached to which are rubber-covered self-aligning top bolster cushions. There is no positive connection between cradle arms and the foundation so that the cradle arm girders are free to rise as the rolling

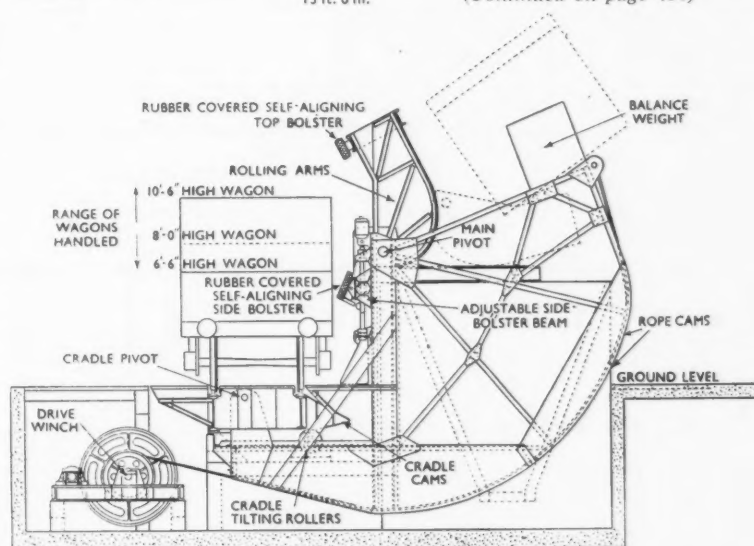
arms roll forward. To reduce the amount of work necessary on the actual tippler structure during tipping, a measure of counter balancing is provided. Counterweights are mounted on the top of the rope-cams close to the hoist rope attachment points, and their function is to bring the cradle arm structure into a condition just short of balance. The tippler will accommodate all normal hopper wagons in addition to wagons of the following dimensions:—

Height from top of rail to top of wagon	6 ft. 6 in. to 10 ft. 6 in.
Width of body outside ... ..	7 ft. 6 in. to 8 ft. 8 in.
Length over headstocks ... ..	15 ft. 0 in. to 21 ft. 6 in.
Wheel base ... ..	8 ft. 6 in. to 13 ft. 0 in.

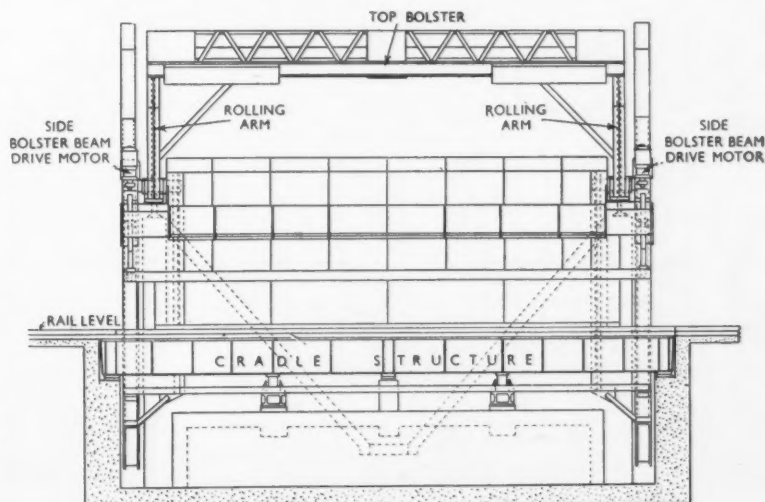
The hoisting gear is electrically driven by a suitable motor. The two drums are geared to the motor by means of a worm reduction gear and trains of machine cut spur gears. A solenoid brake is provided to prevent "run back" in case of current failure. The power from the electric motor is transmitted to the gears through a hydraulic coupling.

The motor is under push-button control for hoisting and lowering. To prevent over-winding the tippler when a fully tipped position is reached an automatic cut-out is provided. A similar cut-out is arranged at the "down" point

(Continued on page 486)



End elevation showing the arrangement of rolling paths, drive gear and adjustable bolster mechanism



Front elevation showing self-aligning side bolster beam drive motors

## Rolling Stock for Nyasaland

*All-steel construction and integral design*

THE Gloucester Railway Carriage & Wagon Co. Ltd. has recently designed and built a quantity of new rolling stock for the Nyasaland Railways Limited. The order included two first class sleeping cars, five third class sleeping cars, seven fourth class carriages, two passenger brake vans and five bogie goods brake vans. The carriages are of all-steel construction and integral design, and were built to the inspection of the railway's Consulting Engineers Messrs. Livesey & Henderson. All bogies are of the equalising beam type of 6 ft. 1 in. wheel base, and of the railways standard

pattern in which improvements have been embodied. Built for the 3 ft. 6 in. gauge, the principal dimensions are as follow:—

Type	Length over headstocks	Tare weight
First class cars ...	60 ft.	36 tons 18 cwt.
Third " " ...	60 "	35 " 7 "
Fourth, " " ...	60 "	34 " 15 "
Passenger brake vans ...	60 "	32 " 2 "
Goods " " ...	48 ft. 9 in.	30 " 2 "

### First Class Sleepers

The first class carriages provide sleeping accommodation for 22 passengers, arranged in four, 4-berth compartments and three, 2-berth coupé

compartments. End vestibules are provided and entrance to the compartments is by sliding doors in the corridor. Four entrance doors are provided, two at each end, while inter-communication between carriages when coupled together is by vestibule doors.

As will be seen from the accompanying diagram two separate toilet compartments are provided, which are situated at some distance from the ends of the carriage. In addition washbasins are fitted in each compartment which are also provided with plastic topped hinged tables. In the 4-berth compartments the tables are hinged to the body

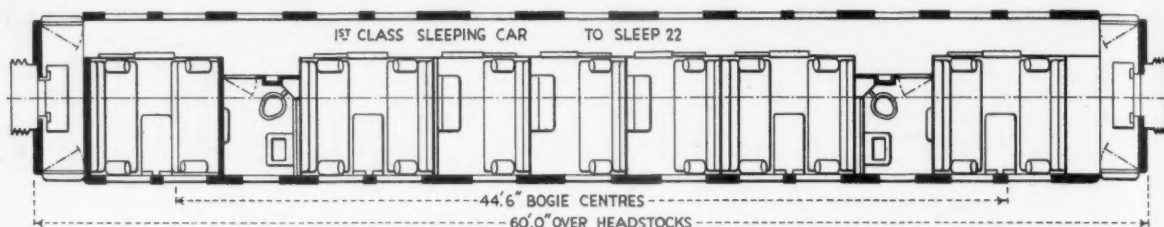


Diagram showing layout of the first class sleeping cars

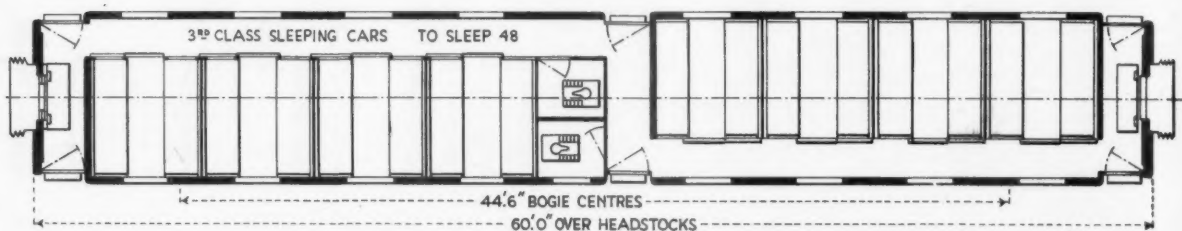
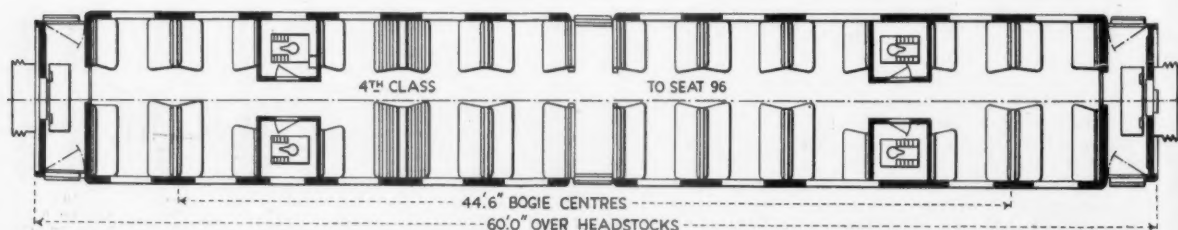
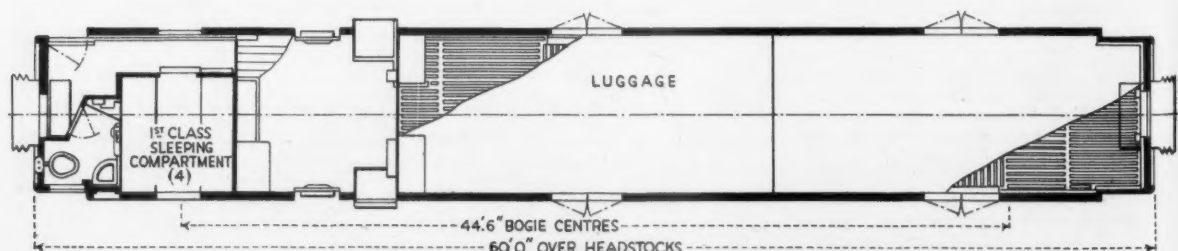


Diagram showing layout of the third class sleeping cars



Layout of the fourth class carriages showing the seating arrangement



Passenger brake van layout showing the arrangement of passenger accommodation

side, and in the coupé compartments to the carriage partitions.

The interior decoration of the compartments and corridor is composed of plywood treated with plastic finish in cream and green shades, supplied by Saro Laminated Wood Products Limited. All berths are upholstered in green buffalo hide, the cross-partitions which carry the hinged berths are also faced with this material.

The fittings which include ashtrays, luggage racks, berth lights and so on, are of chromium plate finish, the corridor accommodation rails are similarly finished. The interior of the lavatories is panelled in stove-enamelled hard-board produced by a special low-temperature process giving a high gloss finish. The floors are covered with green linoleum  $\frac{7}{8}$  in. thick, laid on cork slabs. A green carpet to harmonise with the interior colour scheme is laid in the compartments. An adequate supply of filtered drinking water is provided by two Doulton pressure filters fitted in the corridor.

The third class sleeping cars are somewhat similar in exterior appearance except that two additional entrance doors are provided in the centre, one on each side and to which the toilet compartments are adjacent, sleeping accommodation is provided for 48 passengers in eight 6-berth compartments; four folding berths are fitted. Inter-communication between carriages when coupled together is provided by end vestibules and corridor. As will be seen from the accompanying diagram the corridor arrangement is somewhat different to that provided in the first class sleepers.

Similar methods of construction are employed and standard bogies are

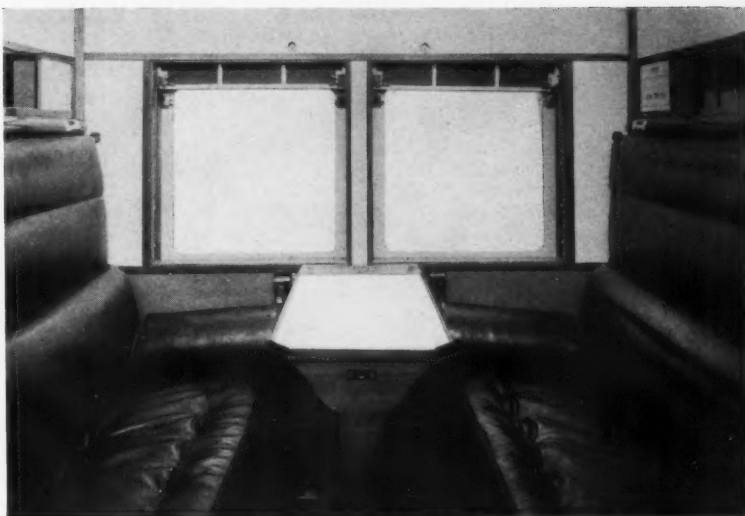
fitted. Interior decoration is composed mainly of  $\frac{7}{8}$  in. thick painted plywood panels fixed to timber framing. The floor is covered with cork linoleum  $\frac{7}{8}$  in. thick. Seats and berths are of teak boards and slats respectively, the parcel racks are also of teak slats. Two Doulton pressure filters are fitted adjacent to the centre doorways.

The fourth class carriages are similar in appearance and construction to the third-class sleepers. Seating accommodation is provided for 96 passengers in an open type compartment with centre gangway. Sliding doors at each end provide access to the compartment. The seats are of teak slats and four

separate lavatories are provided. Interior decoration is similar to that obtaining in the third class sleepers.

#### Brake Vans

The passenger and also the goods brake vans are also of integral construction with standard type bogies. A feature of their design is the provision of sleeping accommodation for four persons in the goods brake vans similar in all respects to that provided in the first class sleepers, and sleeping accommodation in the passenger brake vans similar to that provided in the third class sleepers. The compartments are adjacent to the vestibule entrance;



First class four-berth compartment as seen from the corridor



Interior of first class two-berth compartment



Corridor of first class carriage





*Bogie goods brake van with sleeping accommodation, Nyasaland Railways*

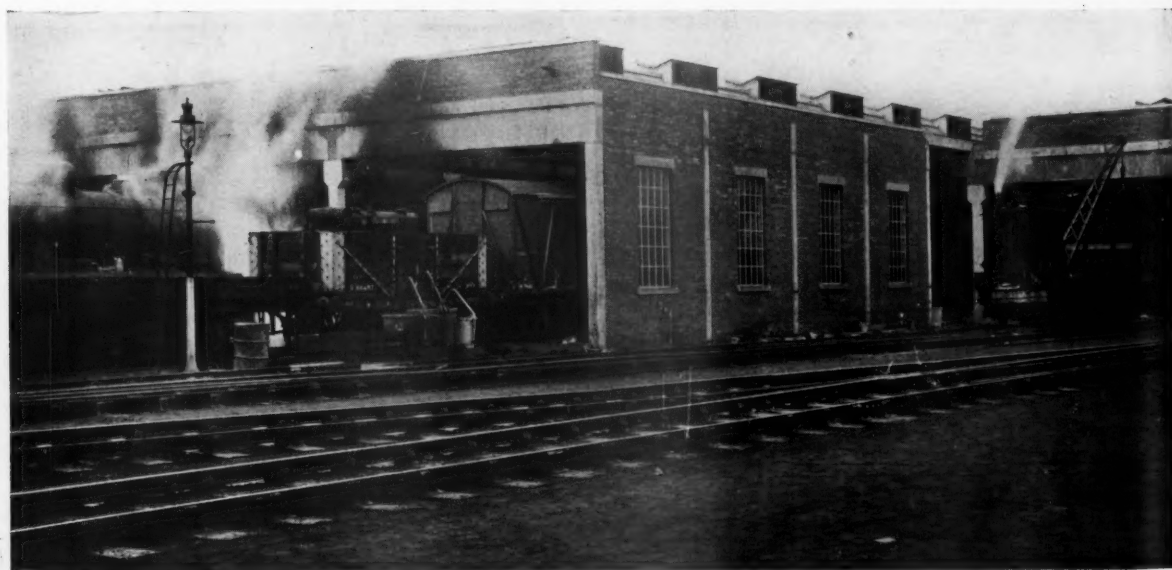
toilet compartments are also provided together with Doulton pressure filters.

The interiors of the vans are lined with teak, and Bostwick gates are provided for sealing off luggage compartments for customs purposes. The

equipment and fittings common to all stock includes Alpax aluminium alloy entrance doors and Monarch roof ventilators. The passenger compartments of all stock are fitted with Alpax framed drop lights with Rawlings

window balance, and lifting Alpax louvres with removable mosquito Monel metal gauze frames. The whole of the electrical equipment for the rolling stock was supplied by J. Stone & Co. (Deptford) Ltd.

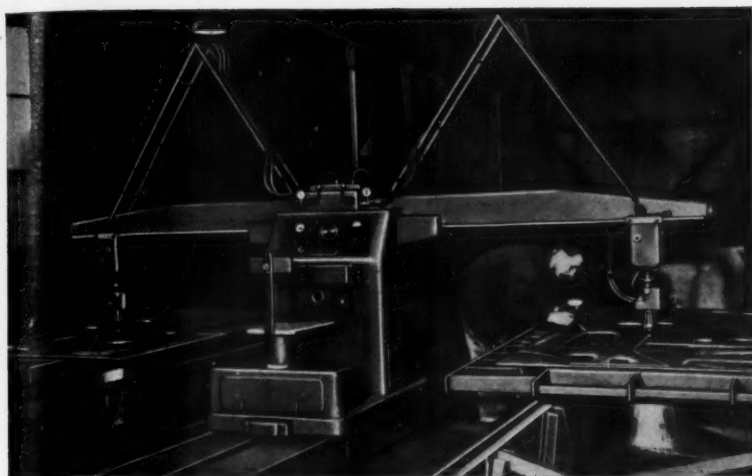
### Improvements at Bescot Motive Power Depot, L.M.R.



*Bescot Motive Power Depot, L.M.R., after recent improvements which have included renewal and extension of roof and renewal of engine pits and shed paving*

## A Duplex Flame Cutter

*In which photo-electric cell control is incorporated making the use of templates unnecessary*



*The Schichau-Monopol duplex flame cutter with photo-electric cell control*

AS a result of research the firm of F. Schichau A.G. has developed a duplex-headed, fully automatic flame cutting machine incorporating photo-electric cell control. The machine, known as the Schichau-Monopol, the agent for which is John Kimbell & Co. Ltd., has a maximum travel of 39 ft.

with a maximum working length of 32 ft. 6 in. The gibs are available in two lengths: 6 ft. 6 in. by 9 ft. 9 in. or 6 ft. 6 in. by 13 ft., the maximum working breadth of the arms being 6 ft. 6 in. by 6 ft. 6 in. or 6 ft. 6 in. by 9 ft. 9 in. respectively. The machine is equipped with rapid traverse along the centre

bedplate within a range of 9½ in. to 5 ft. per min., and when set for flame cutting, from 4½ in. to 2 ft. 6 in. per min. Speeds are infinitely variable. In the longitudinal direction, with the motor de-clutched, the rapid travel to the starting position can be increased. The machine can cut plates from 0.118 in. to 6 in. thickness.

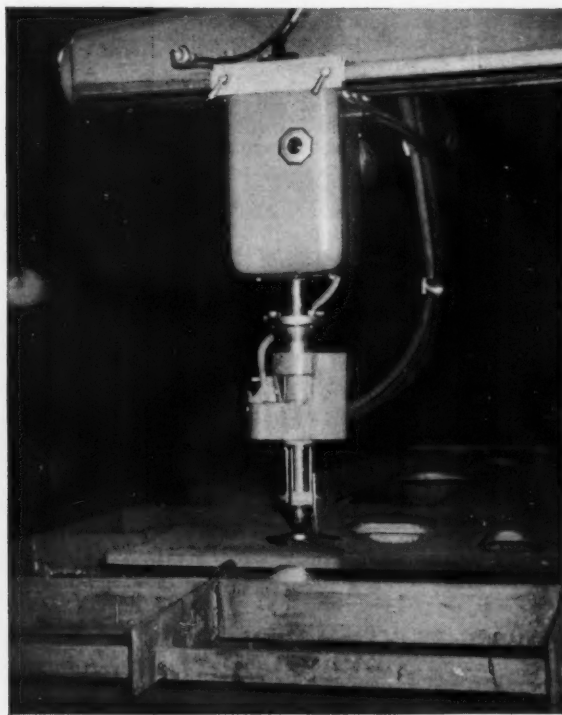
### Method of Control

A feature of the machine is the method of control, which is by a built-in photo-electric cell unit, made under licence by Lumoprint-Dr. Boeger. A template is not necessary since the movement of the burner heads is controlled by the photo-electric cell housed in the column in conjunction with a photographic negative, reproducing to a scale of 1 to 100 the shape to be cut, which is inserted into the control console of the machine; a photographic unit can be supplied with the machine if necessary.

The burner heads are brought to their starting point, which is indicated to the operator when looking inside the console of the machine. An indicator on the control panel shows in which direction the burner heads are moving, and is adjusted to suit the direction of approach required according to the



*The console, showing the machine controls*



*Burner head, showing arrangement of supply leads*

movement of the light-beam on the negative.

When the light beam reaches the starting point an indicator gives the signal for the switching on of the fully-automatic control: When the machine has been switched on, the burner heads are stopped by means of a foot switch and lowered to the work from the control console. The burners regulate themselves automatically for height from the workpiece, an obvious advantage where workpieces of uneven surfaces require to be cut.

After the burners have completed the profiles determined by the negative the oxygen is automatically cut off, and the machine comes to a standstill. Where bevelled edges have to be cut the

machine automatically swivels the burning heads to the correct angular setting however the curve may change its shape. In addition the facility to combine marking-out hole centres at fixed distances from the burning line at the same time is provided. The machine can also be used for marking out, an exchange of tools only being required.

#### Profiles in Reflection

As will be seen from the illustration on page 483 the beam carrying the burner heads extends over both sides of the machine. The movement of the heads can be arranged to cut uniform patterns on both sides of the machine simultaneously. In the case of the profiles being required in reflection, i.e.,

the same shape but opposite hand, this can be done by altering a switch on the control console.

Where markings are required at a constant distance from the burnt edge, a punching head is mounted alongside the burner jet, receiving impulses from the negative. Simple rectangular profiles can be cut with directional control from the console without a mounted negative. It is claimed that considerable economies accrue by the use of negatives, which avoids the use of templates, and consequently the staff normally employed for the purpose, the plant is also single operating, and may be used on batch production on each side of the machine simultaneously. Gas pressure is centrally controlled from the console.

## Spun Reinforced Concrete Signal Poles

*Manufacture in India of lightweight poles with good strength and durability characteristics*

*(From a Correspondent)*

**R**EINFORCED concrete signal posts were first used on railways some thirty years ago. They were of hand-cast construction, requiring elaborate moulds. Several drawbacks, such as weight and porous concrete, which led to early exposure of the reinforcement, and other objections, prevented their use being extended.

In the course of industrial development and the introduction of new electrical transmission schemes, there have been heavy demands for such material as cables, insulators, supports for overhead mains, and so on. This has emphasised the necessity for a lightweight, substantial support which will stand up to the most trying weather conditions and which does not require painting or other type of maintenance. During the past decade extensive use has been made of reinforced pre-cast articles for all types of building projects, and from this development the spun R.C.C. pole emerged. This type of pole has been very widely used in Europe and America for high-, medium-, and low-voltage overhead electric transmission, distribution and communication lines, tramways, and similar applications. Their popularity in India is growing rapidly.

The poles can be made in any section—square, round, hexagonal, octagonal, or other section if required; and in varying lengths from 15 to 60 ft. The process is patented, but permission for its use has been obtained by an Indian company.

#### Production Process

Centrifugal force is used to consolidate the concrete. A steel reinforcement cage is made and put in a steel mould of a particular shape and size. Mechanically-mixed cement concrete is then placed in the mould. The mould is next put on to a spinning machine and is rotated slowly. A special gearing device enables the speed to be gradually increased



*An example of the spun reinforced concrete signal posts now being used on the Indian railways*

until the concrete is held in position by centrifugal action. Surplus water is squeezed out to the inside surface and is almost entirely ejected without segregation. By this method the concrete is made very dense, durable, and strong and the centre, being formed hollow, considerably reduces the weight of the pole.

The company operating this process has over 45 factories in India, and others in Ceylon and Pakistan. In addition to poles for transmission lines, lamp

standards of varying types are produced and also hume pipes for water supply and sewerage schemes in diameters up to 7 ft.

During the past few years R.C.C. spun signal poles have been produced and put into service on the Indian railways. These poles are of square section, tapering towards the top. The top of the pole is cast in circular section of sufficient length to accommodate one or two arm fittings. Indian Railway Standard signal fittings require the use of tubular poles.

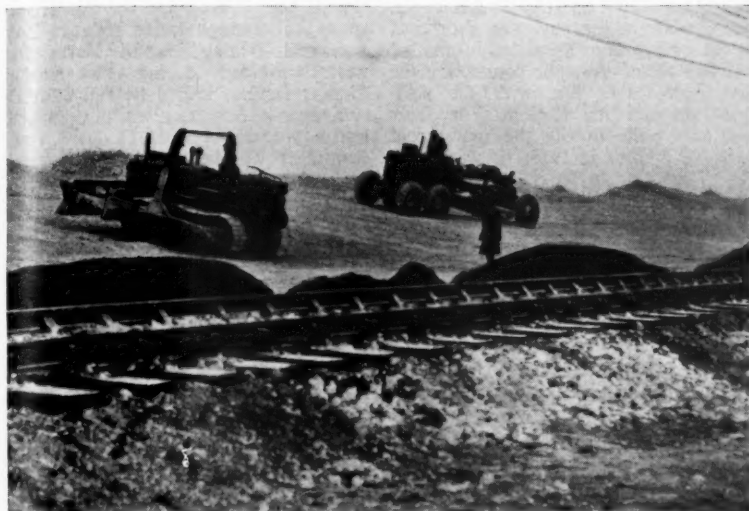
These R.C.C. signal poles cost about one-third of the price of the steel lattice post or one of similar construction. They do not require painting and are very suitable for locations where steel would be quickly affected, and in station yards where signal posts, rodding, and so on, are liable to damage by engines blowing down.

**STORAGE BATTERIES FOR TRANSPORT.**—Results of recent development work in the design of electric storage battery equipment for industry will be seen on the stand of the D.P. Battery Co. Ltd. in the Electrical Section of the B.I.F. at Birmingham. The D.P. Kathanode range of traction cells, specifically designed for the propulsion of electric industrial trucks, road vehicles and locomotives, will all be of the latest improved pattern. One of many recent developments has been the introduction of Porvic ribbed separators, an advance of great importance in the traction battery field. A range of cells based on the robust Kathanode design but adapted to meet the special requirements of marine duties and diesel engine starting on railway locomotives, will support the main display. The remaining exhibits will consist of a selection of D.P. open and sealed type Plante cells from a range catering for every d.c. duty in industry, communications, and in various activities of railway transport.



## Flood Damage Repairs on Kent Coast

*Co-operation between British Railways and  
Kent River Board in building new sea wall*



*Bulldozers spreading chalk delivered by rail for the new sea wall between Herne Bay and Birchington*

**A**MONG the railways severely damaged by the high tides on the night of January 31, was the Southern Region Kent Coast main line from London to Thanet, *via* Faversham, which was breached at Graveney, near Whitstable, and between Herne Bay and Birchington. The damage at Graveney was made good within a few weeks, and the line was reopened for materials trains on February 23, and for passenger traffic between Faversham and Herne Bay on March 2.

Between Herne Bay and Birchington, the damage was more serious. The sea wall was breached in several places, and some 5,000 acres of low-lying land were flooded by sea water to a considerable depth. The railway, which runs nearly parallel to the coast, on a low embankment about half-a-mile inland, was damaged over a length of  $1\frac{1}{4}$  miles, and long sections of track were either washed off the embankment or seriously distorted. Later high tides continued to reach the railway, and to run over it in places, and it became evident that restoration of the line could not be undertaken until it had been possible to provide some measure of protection.

The Kent River Board, faced with the problem of saving a considerable area of agricultural land, and of protecting the railway and the main road to the Isle of Thanet, decided to build a new wall between the railway and the coast. It was evident that the construction of the new wall would be expedited if supplies of filling material (in this case chalk) could be brought in by rail, as well as by road, and a site a few yards north of the railway was selected.

It was decided that when the new wall had reached a certain height, it would be possible to proceed with the restoration of the railway.

The down line was restored and crossovers and other special facilities for the trains of chalk filling installed by February 23. To enable the work to proceed by night as well as by day, groups of powerful electric lights were provided at intervals of about 75 yd. These lamps were mounted on steel scaffolding towers

erected on the site of the up line, and were supplied with current from portable generators.

### Supply of Chalk Filling

Concurrently with the restoration of the service line, a search was made for sites from which chalk filling could be obtained and loaded into railway wagons. These were found at Manston, on the outskirts of Ramsgate, and at Knockholt, and the Kent River Board contractors immediately moved in heavy excavating plant. At Ramsgate, a new siding, about half-a-mile long, which necessitated tipping over 4,000 cu. yd. of material to form an embankment, was laid in three days. Deliveries to the site at Birchington began on February 24, and in the first six days more than 100 trains carrying some 15,000 tons of chalk were run without interference to normal passenger and goods traffic. Chalk is now reaching the site by rail at the rate of approximately 7,000 tons a day. Mechanical equipment is being used to unload the trains, and the material is moved into position by bulldozers. Additional supplies of chalk are being obtained from a site near Ramsgate, and delivered by road.

The new wall begins nearly two miles west of Birchington Station, and will extend for about  $1\frac{1}{4}$  miles in the direction of Herne Bay. It will be carried up to a height of some 14 ft. above the level of the surrounding marshes, which stand at about 6 ft. above sea level. Drainage channels are to be carried through the wall in double concrete box-culverts, supported on two rows of



*Chalk for the sea wall at Birchington being loaded at Knockholt*

steel piles, about 20 ft. apart. The bridges carrying the railway over the drainage channels appear to have escaped serious damage.

Permanent restoration of the track will be undertaken as soon as the new wall has reached a height adequate for the protection of the railway. Deliveries of chalk by rail are then to cease, and the material required for the completion of the work will be carried by road. It is the ultimate intention of the Kent River Board to construct a new sea wall from Birchington to Reculver, about three miles. The new

chalk wall will then become the second line of defence for the railway and the area lying to the south of it.

For the first three weeks after the inundation, trains between London and Ramsgate were diverted at Faversham via Canterbury East, the Kearsney loop, and Deal. On February 23, however, this circuitous journey was shortened by the re-opening, as a fully-signalled double line, of the spur connecting the Faversham-Dover line with the Ashford-Ramsgate line at Canterbury. This spur was built during the first world war, and opened in 1918. It was taken

out of use some two years later, and the tracks were removed in 1935. A single line was restored in 1941, and used for the movement of heavy rail-mounted guns, but the connections with the main line were removed in 1951.

Easter holiday traffic to the Thanet resorts was worked via the Canterbury spur, and through trains between London and Whitstable and Herne Bay were provided during this period. Similar services are to be run at Whitsun, and it has been announced that normal working between Faversham and Ramsgate will be resumed on June 1.

## Oil-Burning Locomotives for Pakistan

*Heavy-duty goods engines for the Eastern Bengal Railway*

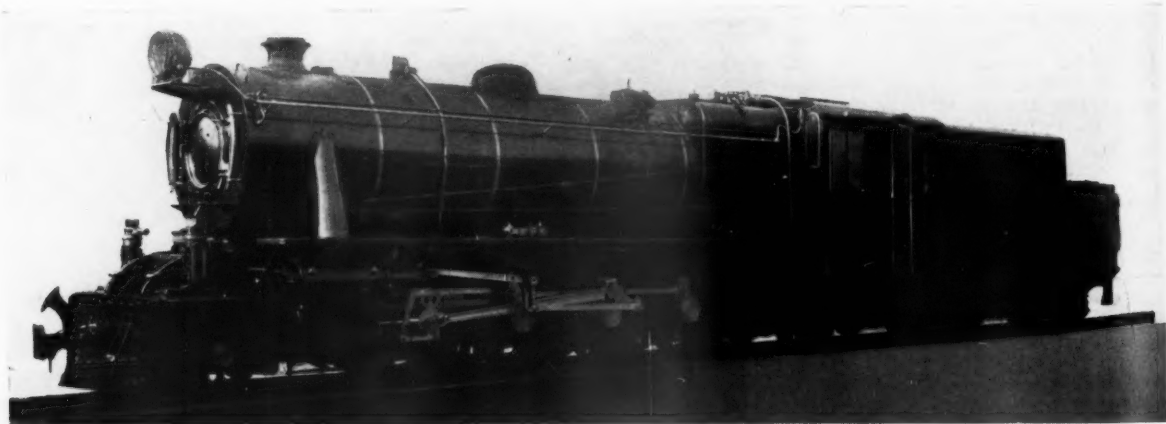
A CONTRACT was placed by the Government of Pakistan with Nippon Sharyo Seizo Kaisha Limited in May, 1951, for 25 heavy-duty goods locomotives for through goods trains on the metre-gauge section of the Eastern Bengal Railway. The engines were delivered between October and December, 1952. The locomotives were to the design and specifications of the Eastern Bengal Railway administration and incorporate oil-burning equipment de-

signed to give the maximum efficiency. The boiler has an all-welded firebox of Belpaire design, with a total evaporative surface of 1,687 sq. ft. The working pressure is 180 lb. per sq. in. and the evaporative rate 12,500 lb. per hr. The fuel consumption when working up to full capacity is 240 gal. per hr. The cylinders have a diameter and stroke of 17 in. x 24 in. respectively, and Walschaerts valve gear is fitted.

The front and hind trucks are de-

signed for adaptation of plain or roller bearings, and ample bearing area is provided on all axles to prevent hot boxes. The locomotives are fitted with speed indicators.

The tender provides a fuel capacity for 2,000 gal. of oil and 3,000 gal. of water. The weight of the engine and tender in working order is 96.23 tons. They have a tractive effort of 22,110 lb. and are 60 ft. 10½ in. long measured over buffers.



*Heavy-duty metre-gauge goods locomotive for the Eastern Bengal Railway*

### A New Design of Wagon Tippler

*(Concluded from page 479)*

to stop the lowering automatically when the tippler is at rest upon the foundations. The operation of the adjustable side bolster is also under push-button control, enabling the operator to select the most suitable height for the wagon being handled. The side bolster is so fitted that it may be placed either in the raised or lowered position; intermediate positions are not required.

To operate the tippler a loaded wagon to be discharged is run on to the cradle

and the brakes applied. While this is being done the height of the side bolster beam is, if necessary, adjusted by selecting the appropriate push button, the correct position for the bolster beam being determined by the height of the wagon. The electric hoisting gear is then put into action. The cradle arms start to rise, and the cradle with the wagon is gradually inclined towards the hopper, the action being controlled by the cradle pivots and cradle cams working on the cradle tilting rollers supported on the foundations. This preliminary action is concluded when the

side of the wagon comes into contact with the side bolster cushions.

The hoisting being continued, the wagon cradle and cradle arms form one unit and revolve about the trunnion pins until the top of the wagon meets the top bolster cushions attached to the top bolster girder, and this now forms the final unit which on continuing to hoist revolves and rolls along the rolling path until the load is fully discharged. The hoisting gear is then reversed, the wagon brought back to the original position ready for removal and replacement by a further loaded wagon.

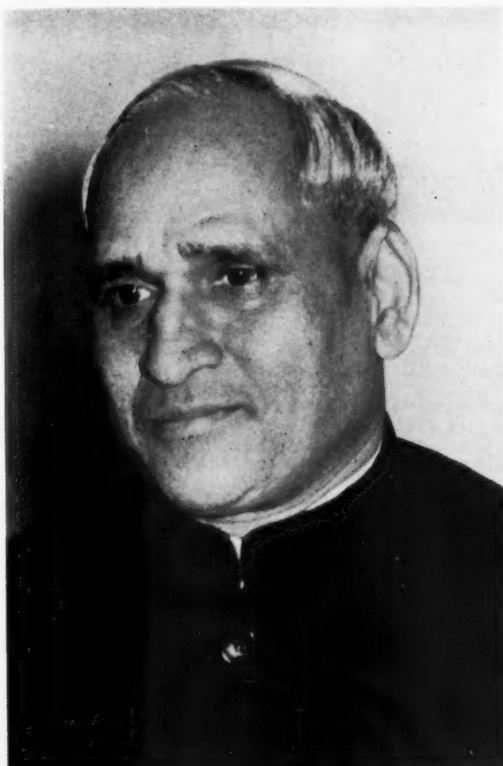
## RAILWAY NEWS SECTION

## PERSONAL

Mr. Frank Lemass, A.C.A., M.Inst.T., who was General Manager of Coras Iompair Eireann until the passing of the Transport Act, 1950, has been reappointed to that post. He was Chief Officer of the Board since the passing of the Act. Mr. Lemass replaces Mr. Geo. B. Howden, who becomes Chairman of the Ulster Transport Authority.

of the newly-formed Indian Railway Rates Tribunal. During the period of over three years he was with that body he was associated with the drafting of the statutory rules of procedure of the Tribunal, as also with the piloting of the initial cases before them. He assumed charge of the post of Chief Commercial Superintendent, Southern Railway, on August 6, 1952, vice Mr. K. L. Crawford, who has proceeded on leave preparatory to retirement.

months, and took over as Deputy General Manager from February, 1946. Mr. Jehangir was posted late in 1948 as Deputy Chief Traffic Manager (Claims). In 1949 he was appointed to special duty in connection with the taking over of the Gaekwar Baroda State Railway, and, in 1949 became Traffic Superintendent of the Broad Gauge system, becoming Chief Commercial Superintendent on the formation of the Western Railway.



*Mr. S. R. Kalyanaraman*  
Chief Commercial Superintendent,  
Southern Railway, India



*Mr. D. Jehangir*  
Chief Commercial Superintendent,  
Western Railway, India

Mr. S. R. Kalyanaraman, Chief Commercial Superintendent, Southern Railway, India, was born on May 22, 1904, and educated at the Hindu High School, Triplicane, and at the Presidency College, Madras. He took his B.A. (Hons.) degree in physics from the Presidency College in 1926, obtaining the first rank in the University for which he was awarded the Prince of Wales Gold Medal. He joined the Madras & Southern Mahratta Railway as Traffic Probationer in March, 1927, and after completing the training period of two years, he worked as Assistant Traffic Superintendent at Hubli and at Bezwada. He was transferred to Madras in 1931 and posted to the Commercial Department in the Headquarters Office, where he held charge of each of the branches from time to time and gained considerable experience. In December, 1947, he was promoted to be Deputy General Manager, Traffic & Establishment. He worked in that capacity till April, 1949, when he was chosen for the post of the first Secretary

Mr. D. Jehangir, Chief Commercial Superintendent, Western Railway, India, joined the old Bombay, Baroda & Central India Railway in January, 1926, as a Probationary Assistant Traffic Superintendent, at the age of 19. After three years' training in all railway departments Mr. Jehangir was confirmed as Assistant Traffic Superintendent and officiated as District Traffic Superintendent from 1934. He was confirmed in this position in 1939, and, during the 1939-45 war volunteered for military service. He joined the Indian Army in the beginning of 1942 in the Corps of I.E., and was attached to G.H.Q. staff in the Transportation Directorate, after which he took over charge of a railway operating unit. In 1944 Mr. Jehangir was recalled by the Railway Board for special duty, and later he re-joined the B.B. & C.I. Railway as Officer on Special Duty, after which he took charge of Ahmedabad District, which is considered the most important district on this railway. In 1945, he officiated as Deputy Chief Traffic Manager for six

Mr. C. W. Clarke, Assistant Commissioner (Engineering), Western Australian Government Railways, is in England on a business visit. During his absence from Australia, Mr. T. Marsland, Chief Mechanical Engineer, W.A.G.R., has been appointed Deputy Assistant Commissioner (Engineering).

Mr. F. R. Murray, Assistant to the General Manager of New Zealand Railways, and Mr. I. M. Clarkson, Senior Architect in the Civil Engineer's Office, are to leave New Zealand soon for the United States and Canada, where they will study station designs, architecture, improvements in station and yard equipment, etc. Primarily they will have in mind a revision of the design prepared some years ago of the New Christchurch station, but the knowledge they gain will be of advantage to the New Zealand Railways Department in carrying out other large undertakings proposed.





**Mr. R. D. Armstrong**  
Appointed Associate Comptroller  
Canadian National Railways



**Mr. J. P. Cunliffe**  
Appointed Engineer, Signal & Telegraph,  
Malayan Railway



**Mr. W. Russell**  
District Engineer, Perth, Scottish Region,  
British Railways, 1949-53

Mr. Robert Douglas Armstrong, Director of Finance & Administration for A. V. Roe Limited, Toronto, has been appointed Associate Comptroller of the Canadian National Railways. Mr. Armstrong will join the company in Montreal on June 1. A native of Ottawa, Mr. Armstrong, who is 36, holds a Bachelor of Commerce degree (Queen's). He became a chartered accountant in 1941 while working with Price Waterhouse & Company. He gained extensive experience in the creation of accounting organisations, development of cost reporting and budget control systems during six years of association with Imperial Oil when he was engaged principally in directing and devising accounting procedures for Imperial's oil exploration and development in Alberta. During the two years he has been with A. V. Roe, Mr. Armstrong has initiated and installed accounting systems for aircraft and gas tur-

bine development, tooling and manufacturing on a large scale. He has engaged in financing operations, contract negotiations and the installation of capital budget and other accounting systems. In 1942 Mr. Armstrong enlisted in the Canadian Army as a private. On demobilisation he held the rank of lieutenant.

Mr. J. P. Cunliffe, M.I.R.S.E., Materials Assistant to the Signal & Telecommunications Engineer, Scottish Region, British Railways, who, as recorded in our March 27 issue, has been appointed Engineer, Signal & Telegraph, Malayan Railway, was born in London on April 16, 1917, and was educated at Trent College, Derbyshire. In 1936, he entered the service of the London Midland & Scottish Railway at Crewe as a Signal & Telegraph Engineering Apprentice. During the 1939-45 war Mr. Cunliffe served in H.M. Forces in the

United Kingdom and the Middle East, attaining the rank of major, and, from 1943 onwards, being in command of Railway Telegraph Units. After release, he rejoined the L.M.S. at Watford as a Technical Assistant, and, in April, 1946, was transferred to Derby in the same capacity. In 1949, Mr. Cunliffe was appointed Assistant to the Signal & Telecommunications Engineer, Scottish Region, which position he now vacates.

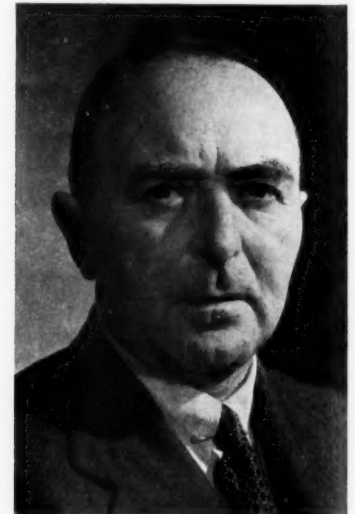
Mr. W. Russell, District Engineer, Perth, who has retired, is a native of Kincardineshire. He received his early education at Montrose Academy and at Glasgow Royal Technical College, where he obtained a Diploma in Civil Engineering and an Associateship of that Institution. Subsequently, Mr. Russell graduated B.Sc. in Engineering at Glasgow University before joining the Clyde Navigation Trust. Later



**Mr. D. C. Bajjal**  
Divisional Superintendent, Jodhpur,  
Northern Railway, India



**Mr. C. N. Morris**  
Appointed District Motive Power Superintendent,  
Kings Cross, Eastern Region, British Railways



**Mr. J. A. Esplin**  
Senior Traction Engineer (Railways),  
Crompton Parkinson Limited

he took up an appointment with Messrs. Sir William Arrol & Co. Ltd., and gained considerable experience in the design and construction of civil engineering works. In June, 1913, Mr. Russell joined the staff of the Civil Engineer, North British Railway Company, and in 1928 took charge of the Constructional Department in the Edinburgh Office of that company. In 1935 he was appointed District Engineer, Thornton, London & North Eastern Railway, assuming responsibility for the Tay Bridge and several docks on the Firth of Forth. On the reorganisation of the Civil Engineering Districts in 1949 following nationalisation of the railways, a portion of the former London Midland & Scottish territory was merged with the Thornton L.N.E.R. District under Mr. Russell as District Engineer, Perth. This enlarged District also included the Forth Bridge. Mr. Russell retired on March 31.

Mr. D. C. Baijal, Divisional Superintendent, Jodhpur, Northern Railway, was born on August 8, 1906. After a brilliant academic career and obtaining a First-Class First in B.Sc. at the Allahabad University, he joined the Thomason College of Civil Engineering, Roorkee, in 1926. He passed out from there in 1929 and was awarded the Council of India Prize for being the most distinguished student of the year and several other prizes. He joined the Indian Railway Service of Engineers in 1930 and was posted as Assistant Executive Engineer on the Eastern Bengal Railway. After working as Sub-Divisional Officer in Assam, North Bengal and East Bihar, he was appointed Executive Engineer in charge of the Calcutta District in 1941. In this capacity he carried out several important re-modelling schemes to meet the demands of military traffic. He joined the Defence of India Corps (Railways) as a Commissioned Officer in 1942, and on resigning in 1946 he was awarded the honorary rank of Major and also the Burma Star, 1939-45 Star and the War Medal. In December, 1946, he was transferred to the Railway Board as Deputy Director (Projects), and in November, 1947, he was promoted to the post of Joint Director, Civil Engineering. In March, 1952, he was appointed as Secretary of the Ganga Bridge Enquiry Committee—appointed by the Government to recommend the most suitable location for a new combined railroad bridge across the river Ganga. On completion of this work, he resumed duty as Joint Director, Civil Engineering. After holding this post for nearly five years, in October, 1952, he was appointed as Divisional Superintendent of Jodhpur Division of the Northern Railway, in charge of what was previously the Jodhpur Railway.

Mr. C. N. Morris, A.M.I.Loco.E., District Motive Power Superintendent, Cambridge, British Railways, Eastern Region, who has been appointed District Motive Power Superintendent, Kings Cross, was educated at Doncaster Grammar School and Doncaster Technical College. He entered the service of the London & North Eastern Railway as a Premium Apprentice at Doncaster Locomotive Works in January, 1927, and, after the usual period of training, was appointed Supernumerary Running Shed Foreman at Stratford in April, 1931. Further appointments as Mechanical Chargehand and Running Shed Foreman at various Depots followed until, in July, 1938, Mr. Morris was appointed as a Technical Assistant at Headquarters, Liverpool Street. He remained at Headquarters until May,

1942, when he became Assistant District Locomotive Superintendent, Ardsley, and, in June, 1943, was appointed Locomotive Shed Master, Grantham. In August, 1944, Mr. Morris moved to Gorton as Assistant to District Locomotive Superintendent, and was appointed Assistant to Locomotive Running Superintendent, Eastern Section, Shenfield, in April, 1945. In November, 1947, Mr. Morris was appointed District Locomotive Superintendent, Norwich, and, in March, 1951, was appointed District Motive Power Superintendent, Cambridge, which position he vacates on taking up his present appointment.

Mr. J. A. Esplin, M.I.Mech.E., who, as recorded in our March 20 issue, has joined the staff of the Traction Division of Crompton Parkinson, Limited, at Chelmsford as a Senior Traction Engineer (Railways), was educated at Ellesmere College, Shropshire, and received his technical education at the Regent Street Polytechnic. He joined the Mechanical Department of the Buenos Aires Great Southern Railway in 1924, and, in 1936, was appointed District Light & Power Engineer, having under his charge the maintenance and operation of Light & Power installations in the North District of the Buenos Aires Great Southern Railway system, including the maintenance and operation of the electrical equipment of the Mobile Power Houses on suburban services and Diesel-Electric Locomotives on main line services. In 1949, on the re-organisation of the ex-British owned Railway companies in the Argentine consequent on their sale to the Argentine Nation, he was appointed Chief of the Electrical Division of the Buenos Aires Great Southern Railway system, and in 1951 Technical Adviser to the General Manager.

The following staff changes are announced by British Railways (London Midland Region):—

Mr. J. Greenwood, District Operating Superintendent, London (M), to be District Operating Superintendent, London (W).

Mr. S. Lea, District Operating Superintendent, Barrow, to be District Operating Superintendent, Birmingham (M).

Mr. E. I. Boyd, Assistant District Commercial Superintendent, Peterborough (Eastern Region), to be Assistant District Traffic Superintendent (Commercial) Chester.

Mr. A. Howarth, Agent for Accounts, D.G.S.O. (Centralised Accounts), Birmingham, to be Assistant to District Goods Superintendent Wolverhampton L.M./W.R.

Mr. H. E. Hipkiss, Goods Agent, Birmingham, Curzon Street, to be Goods Agent, Birmingham, Lawley Street.

Mr. G. H. Torr, Assistant Agent for Accounts, D.G.S.O. Manchester, to be Goods Agent, Stockport.

Mr. E. Kelly, Goods Agent, Liverpool, Alexandra Dock, to be Goods Agent, Liverpool, Park Lane.

Mr. F. J. Chappell, Stationmaster, Dudley (W.R.) to be Stationmaster, Alexandra Dock.

Mr. C. G. E. Adnitt, Stationmaster, Berkhamstead, to be Stationmaster, Matlock.

Mr. A. V. Furniss, Goods Agent, Nuneaton, to be Goods Agent, Bedford.

Mr. Paul Clément Durrant, British Railways General Agent for France, has been awarded the Legion of Honour (rank of Chevalier).

Mr. J. Colclough, Staff Assistant to the Motive Power Superintendent, Western Region, British Railways, has been appointed Assistant (Mechanical) to the Motive Power Superintendent of the same region.

Mr. A. J. Ede, whose retirement as Assistant General Manager of the New Zealand Railways was recorded in our January 30 issue, has been appointed Consultant on railway matters to New Zealand Forest Products Limited.

Mr. George L. Wilcox has been elected Vice President (Sales) and a Director of the Westinghouse Electric International Company.

Mr. E. Butler-Henderson has been appointed a Director of Richardsons Westgarth & Co. Ltd.

Mr. H. Somerville Smith, C.M.G., D.S.O., O.B.E., M.C., Comptroller General of the Export Credits Guarantee Department, has been appointed Export Consultant (Commercial) of Beyer, Peacock & Co. Ltd.

Mr. H. W. Secker, Joint Managing Director of Thos. W. Ward, Limited, has been appointed a Director of the Park Gate Iron & Steel Company.

We regret to record the death on April 18, at the age of 70, of Mr. H. A. Lingard, for 17 years a Director of the British Thomson-Houston Company.

Mr. R. F. Rucker has been appointed Director of Non-Ferrous Metals from May 1 next in succession to Mr. C. A. James who has resigned his appointment as Director as from the end of this month.

Mr. Sidney Maltby is leaving the Railway Executive, British Railways (Southern Region), to take up an appointment with Grant, Lyon & Co. Ltd., Railway & Civil Engineering Contractors, as their Western Area Manager. He will succeed Mr. A. E. Simpson, who will be taking over the managership of the Eastern Area.

The following candidates have been recommended by the Council of the Institution of Locomotive Engineers for election at the General Meeting to be held on April 15, 1953:—

*Associate Member:* Mr. A. Usher, District Mechanical Engineer, Iraqi State Railways, Baghdad.

*Graduate (reinstated):* Mr. K. P. Jayaram, Senior Assistant (Power), Chief Transportation Superintendent's Office, Central Railway, Bombay. Mr. H. S. Kapoor, Assistant District Mechanical Engineer, Assam Railways.

*Transfer Associate Members to Members:* Mr. B. Basu, General Manager, Indian Standard Wagon Co. Ltd., Burnpur, India. Mr. A. H. Emerson, Electric Traction Engineer, British Railways, Manchester.

*Transfer Graduates to Associate Members:* Mr. A. M. Johnston, Senior Draughtsman, North British Locomotive Co. Ltd., Glasgow. Mr. J. C. Pemberton, Technical Assistant to the Chief Mechanical Engineer, Coras Iompair Eireann, Inchicore, Dublin.

The late Brigadier James Storar, who until his death on January 30 was Chairman of Robert Stephenson & Hawthorns, and of the Vulcan Foundry, and a Director of other railway concerns, left £15,267 2s. 7d. gross, £12,080 11s. 0d. net value.

## Great Indian Peninsula Annual Dinner

*Sir Guthrie Russell on the history of the railway*

The Great Indian Peninsula Officers' reunion dinner was held at the Rembrandt Hotel, Thurlow Place, London, S.W.7, on April 16. The chair was taken by Sir Guthrie Russell, a former Agent of the G.I.P.R., and later Chief Commissioner of Railways, Indian Railway Board.

Sir Guthrie Russell, giving the toast of the G.I.P.R., said that the occasion was a particularly happy one, as the dinner had been arranged to coincide with the Centenary celebrations now being held in Delhi. One hundred years ago today the first section of the G.I.P.R. from Byculla to Thana, a distance of some 20 miles, was opened to public traffic.

It may have been a small beginning, but it was the beginning of a system which was eventually to stretch from Bombay to Delhi, and half way to Calcutta and Madras. It was also the beginning of the great railway system of India and Pakistan, which today had a total combined mileage of some 41,000 miles. It would be interesting to see the original prospectus of the G.I.P. Railway; he wondered whether the original directors visualised the part the G.I.P.R. and other railways which followed were to play in the industrial development of India.

### Original Surveys

Recently, through the courtesy of the Chief Engineer of the G.I.P.R., he had the opportunity of seeing several papers which were read by James Berkeley, Chief Resident Engineer, on the Bhor and Thull Ghat projects. Reconnaissances of the Thull Ghat appear to have started in 1847, although it was not until early 1850 that the G.I.P.R. engineers commenced their surveys. Originally, the opinion was expressed that it would be impossible to build a road, much less a railway over the Ghat.

Alternative routes were surveyed, and the one which appeared to find most favour was *via* the Tapi valley. This would have added a distance of some 130 miles to the distance between Bombay and Calcutta. The route through the Thull Ghat was the most economical route, and approval to the construction was accorded in September, 1856. The immense difficulties, the monsoon, and cholera were overcome, and the Bhor and Thull Ghat section is a lasting monument to British engineering and skill.

Sir Guthrie said it would be impossible to enumerate the advantages that the railways had brought to India. They had to all intents and purposes eradicated famine, and had made possible such vast industrial undertakings as the Tata Iron & Steel Company, the Steel Corporation of Bengal and many others, together with the great irrigation schemes of India, among the greatest in the world, to be put to their fullest use. The G.I.P.R. had played its part in all this. It had also kept pace with the times, and had been the first railway in India to introduce electric traction, now one of the largest electrified systems in the Commonwealth of Nations, and with the B.C.I.R., had introduced air-conditioned travel in India.

They would be glad to hear that Mr. H. P. Hira, the present General Manager, had sent a telegram of good wishes, which he had on their behalf reciprocated. Sir Guthrie thanked Mr. C. E. Hall, the Secretary, Colonel Emerson, Mr. C. S. Cock,

Mr. W. Hood and Mr. S. Barber for the excellent arrangements made.

Mr. C. C. Inglis, Chief Research Officer, British Transport Commission, referred to his pleasant associations with the G.I.P.R. officers during his connection with the railway, and he was indebted to them for much of his knowledge of railway operating.

Mr. K. Sadagopan, Director of Finance, Special Duty, Indian Railway Board, in reply said they had a heritage of which they were proud, and he was sure India would do its utmost to carry on the tradi-

tions which had been established by the pioneering railway enterprises.

Among those present were:—

Messrs. H. H. C. Barton, S. Barker, A. J. Bayross, L. Bigg-Wither, R. C. Case, J. H. Carpenter, C. W. Clarke, C. M. Cock, Colonel Colvin, Sir George Cuffe, Mr. Dawson, Colonel R. B. Emerson, Messrs. E. L. Ensor, G. Everett, Mr. Fanshawe, Mr. A. J. Frazer, Mr. Frutchely, Messrs. L. J. Gannon, A. P. Goldney, T. Gotting, C. E. Hall, R. Harris, T. Hill, L. A. Hoyle, W. Hood, R. Horsfield.

Messrs. E. Ingoldby, C. C. Inglis, R. Ivey, F. Martin, D. McGee, Mr. McInerney, Mr. Milne, Messrs. J. W. Morrison, A. E. Mould, Mr. Payne, Mr. Puri, Mr. Rao, Mr. J. B. Remington, Mr. Roche, Mr. C. I. Routh, Sir Guthrie Russell, Messrs. E. W. Russell, K. Sadagopan, C. Scarff, O. G. Stanley, Mr. Tattersall, Mr. Wheatcroft, Mr. A. E. Williams, Sir Leonard Wilson, Mr. J. Wrench, Mr. Wood.

## Institution of Railway Signal Engineers

*Mr. T. Austin's presidential address at annual general meeting*

The annual general meeting of the Institution of Railway Signal Engineers was held in London on April 8, 1953, when the retiring President, Mr. T. S. Lascelles, took the chair at the opening of the proceedings. Before passing to formal business, Mr. Lascelles announced with regret the death of Mr. H. M. Proud, a Past-President of the Institution, and of Mr. J. Steven, Associate Member.

After Mr. G. J. Dickin, Honorary General Secretary, had read the notice convening the meeting, and the report of the auditors, Mr. Lascelles reviewed the main features of the Council's report for 1952. After the extraordinary general meeting on December 12, 1952, the Council had decided that new subscription rates should come into force on January 1, 1954. The activities of the overseas sections were continuing, very good work having been carried out by the Australia and Western India Sections. The affiliated Signal & Telegraph Technical Societies were also very active.

Mr. B. Reynolds, Honorary Treasurer, said there was an increase in the accumulated fund; and again, the sale of booklets had more than covered the small loss on the ordinary working account of the Institution. The report and accounts were formally adopted.

Mr. Lascelles then presented to Mr. D. G. Shipp the prize for the best paper read before the Institution in 1952, "Track Circuits in d.c. Electrified Areas," and to Mr. W. Owen the second prize for his paper on "Special Signalling for Temporary Speed Restrictions on London Transport Tube Lines." A complete set of lecture booklets in the Institution's binder was presented by Mr. Lascelles to each of the lecturers.

The composition of the Council for 1953 was announced by Mr. Lascelles as follows:—

President, Mr. T. Austin; Vice-Presidents, Messrs. J. H. Fraser and E. G. Brentnall; Members of Council, Messrs. F. Burton, C. G. Derbyshire, F. B. Egginton, R. A. Green, F. G. Hathaway, J. C. Kubale, W. Owen, D. G. Shipp, J. F. H. Tyler, A. F. Wigram, O. H. Hoffman, M. Le Sueur, F. Mann, N. Marshall, A. L. Mills and R. A. Powell.

On the invitation of Mr. Lascelles, the chair was taken by Mr. T. Austin, after which Mr. E. G. Brentnall moved, and Mr. J. C. Kubale seconded, a cordial vote

of thanks to Mr. Lascelles for his services as President during the preceding session.

### Presidential Address

The new President, Mr. T. Austin, then delivered his inaugural address.

Referring to the essential part to be played in the transport system of the country by the railways, Mr. Austin said the continual interest shown by inventors, engineers, and manufacturers in improving equipment for railways was significant. Signalling and telecommunications received their full share of attention, as had been seen from almost the first days of railways, and in Great Britain alone nearly 6,000 patents had been granted for inventions relating to railway signalling devices and methods, many of which, including some which had revolutionised railway operation, had been produced by non-railway men.

At the stage now reached the importance of collaboration between the manufacturers and users of such apparatus could not be over-emphasised. That was the only way in which progress could be achieved. Manufacturers were in touch with railways in all parts of the world and were in a position to act as a clearing house for interchange of experience in every phase of signal engineering. The information obtained from the centralised system of fault report recording now in force on British Railways might usefully be made accessible to the manufacturer, who could be guided by it in designing new and improved equipment. There were a number of matters on which a greater degree of standardisation and agreement could be realised without detriment to progress. There was, for instance, the matter of track circuit shunt values, on which there were notable variations of practice as between various countries.

It might be thought, continued the President, that there was little now left to investigate, but there was, for example, the problem of providing continuous indication of the presence of a train on sections where steel or concrete sleepers were laid, which still awaited a simple and inexpensive solution. It was encouraging to see how the large concentration of signalling effected at York, about which originally some felt misgiving, had proved itself in practice and opened the way for further similar schemes. Relay interlocking appeared to have come to stay, but there



was room for discussion on details and it might be that miniaturisation had in some items been carried to excess.

A remarkable and far reaching step of recent date was the increasing use being made of the plug-in principle for relays, and other components, with saving of time when making replacements and elimination of risk of error. It would be advisable to give special thought to the design of signalboxes and to consider putting in air conditioning and filtering plant the better to protect the vulnerable materials used in modern apparatus. The cost would be small in relation to that of the main equipment, but the benefits would be well worth while, more especially in areas where the atmosphere became polluted with corroding chemicals. The continual extension of electrical apparatus gave importance to the general question of servicing, something which could be dealt with appropriately by the railways in co-operation with the manufacturers.

Speaking of the introduction of new, improved forms of material, the President referred to progress made in the manufacture of permanent magnets, of particular interest to signal engineers and likely to have considerable influence on the design of future a.t.c. equipment, while interesting developments in relay construction also had been opened up. Rectifiers were having a great influence on the development of circuit design, while the increasing use of plastic materials also was having a marked effect on designs. The installation of so much highly developed equipment gave growing importance to the need of adequate staff training and here there was opportunity for exchange of facilities between the railway and manufacturing staffs, enabling each to know more closely the work of the other. It appeared advisable to recruit traffic officers concerned with station layouts and signalling from the signal department, where they would have received a good engineering background.

For historical reasons Britain's railways found themselves faced today with peculiar difficulties and it was certain that the signal engineer and industry could play a large part in devising schemes and equipment to contribute to the economies and greater efficiency required. Higher speeds would follow if all trains had continuous brakes. This would call for large extensions of automatic signalling, improvement of existing layouts, and marshalling yard facilities. At the same time, it was probable that greater use would be made of remote control methods, of which not much advantage had yet been taken in Britain. Automatic train control, on which no doubt a firm decision soon would be made, would provide an adjunct to that general speed-up, the cardinal objective of future railway operation; no reasonable person would deny to drivers that automatic assistance, the generally-accepted principle so far as signalmen were concerned.

The President spoke of the experiments being conducted in the North with 50-cycle a.c. traction, raising problems of interference for the signal and telecommunications engineer and calling for the provision of track circuit equipment able to work under the special conditions obtaining. Overseas railways would benefit by consulting the signal engineer at an early stage in any new extension work so that maximum facilities could be achieved for the capital expenditure.

Often permanent way layouts proved to be wasteful of operating time, or stations and loops placed without regard for all local conditions. The c.t.c. system appeared

to offer an economic, practical solution to many of the problems, removing the disability attendant on staffing the locations by controlling signals and points from a long distance. Here again, continuous indication of the position of trains was necessary and in many cases wooden sleepers could not be used and the problem of an alternative to track circuiting was encountered.

Concluding, the President said that early in the life of their Institution, those engaged in the signalling and allied industries had been admitted to membership and had contributed much of their knowledge to the advancement of the profession it represented, an excellent example of the

advantage of associating designer, manufacturer and user on an equal footing. The step recently taken in extending the scope of membership would, it was hoped, increase the circle of the Institution's influence. In it they had something too valuable to be allowed to languish for want of enthusiasm, but devotion and perseverance had brought it through the deadening effect of two wars. No other branch of railway engineering offered such a wide variety of interest or required such diversity of knowledge for its execution as the work of the signal engineer.

A vote of thanks for the address was proposed by Mr. F. L. Castle and seconded by Mr. A. Moss.

## B.T.C. Charges Scheme Before Tribunal

*Hearing of objectors continued*

In re-examination by Mr. Geoffrey Lawrence, Q.C., on April 15, Mr. S. W. Hill, for the Middlesex County Council, said he felt much more hopeful about the danger of a further round in wage increases by reason of the Budget, which was in line with what he considered a general movement towards lower prices.

Mr. Lawrence then addressed the Tribunal on behalf of the Middlesex, Berkshire, Buckinghamshire, East Sussex, Essex, Hertfordshire, Kent and Surrey county councils. He declared that it had never been their case that London travellers should be subsidised by anyone outside London. He was sure that the detailed approach of his witness, Mr. Hill, to the position in London was a better one than that of the Commission, who said, in effect, that they realised the question could not be approached with mathematical accuracy, and that a broad guess was as near as one could get.

Mr. Frederick George Isaac, Secretary of the London Printing & Kindred Trades Federation, said the proposed increases would add 1s. 6d. to 2s. a week to the expenses of his members.

On April 16 Mr. D. J. Turner-Samuels stated the opposition of the London Trades Council to the fares increase. He submitted that rising fares were driving Londoners off their transport system, a fact which the Commission deliberately refused to face. Shopping, sport, and general entertainment journeys were particularly likely to be affected by increased fares.

Mr. Turner-Samuels pointed out that the Commission had declared its policy to be to abolish workmen's and early morning rates of single and return fares and had said that the present scheme was a step in the right direction. He continued: "I ask you not to consider the reduction of early morning tickets but their extension to enable clerical workers to take advantage of them."

Mr. W. J. Glover, for Brighton Corporation, said season ticket travellers between Brighton and London would have to pay an extra 5s. 3d. (third class) and 8s. (first class) a quarter. The quarterly season ticket price had risen by £4 11s. 6d. (first class) and £1 16s. (third class) since 1947.

At Friday's hearing Mr. G. R. Rougier, on behalf of Southend Corporation and the Southend Railway Travellers' Association, proposed a special rate for the Southend group; either as an alternative, or in addition, there should be a "non-intermediate" season; a day return ticket should be available from Southend to London.

Mr. H. S. Vivian Smith, for the Association of British Chambers of Commerce, said that his association was not at all certain that a full inquiry into the running of the British Transport Commission would not show ways in which the Commission's expenses could be reduced.

The Association would like to see inserted in the scheme a mandatory provision to cover the issue of traders' season tickets at a level not lower than 25 per cent below ordinary seasons.

For the London District Committee of the National Union of Furniture Trade Operatives, it was urged by Mr. J. Moss that the number of his union's members who walked or cycled to work had increased since the last fares award. If fares rose higher the trend of not using London Transport would continue.

On April 20 Mr. Gerald Reynolds, for the London Federation of Trade Councils, suggested certain economies that might be made in the London Transport system. He claimed that high fares in the London area were already reducing the mobility of the labour force.

Mr. C. Osmond Turner, for the London Passengers' Association, also thought there was some extravagance in small matters, and he did not think the Commission was seeking to gain new traffic by new services or off-peak fares.

Mr. D. J. D. Welburn said on behalf of the Benfleet & District Railway Travellers' Association that he thought cheap day tickets from their area, where there were few cultural activities or large stores, would show a profit.

The hearing was continued on April 21, when it was suggested by Mr. F. A. Ruler, for the Federation of Ratepayers' Associations in the County of Kent, that services on existing surface lines might be improved as a means of increasing revenue instead of incurring expenditure by building tubes.

Mr. Geoffrey Ripon, for East and West Ham Borough Councils, and the S.W. Essex Traffic Advisory Committee maintained that there had not been time since the last fares award to judge fairly its effect in revenue, and suggested that the B.T.C. was paying too little regard to the losses of traffic resulting from increased fares.

Mr. Leon Maclaren, on behalf of the L.C.C., and the London Printing & Kindred Trades Federation, said he thought it odd that at the time the B.T.C. launched its application in January, the Railway Executive launched an experiment in reduced fares.

The hearing was adjourned until Wednesday.

**Parliamentary Notes****Transport Bill in House of Commons***Sale of nationalised transport assets: Conservatives accused of facilitating advance information*

The debate, postponed from March 31, on the 71 amendments to the Transport Bill inserted in the Bill's passage through the Lords was begun on April 21, at 3.43 p.m. The Government was in agreement with all the amendments, and the Opposition had tabled 68 amendments to the Lords amendments.

On Clause 1 (Disposal of nationalised road haulage undertaking) Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) moved that the House should agree to the amendment providing that the Commission should not be compelled to dispose of any property which was money or a claim for a debt or other monetary claim. He said that without this alteration the B.T.C. would have to dispose of all debts, monetary claims, bank balances, and even cash arising out of their road haulage operations. This would have put them into a position of some unfairness.

After some discussion of points of order the House divided and the motion was carried. Further discussion on procedure followed.

On clause 2 (Road Haulage Disposal Board), on the motion to agree with a Lords amendment to provide that any directions given by the Minister should be included in the report which the board made at least once every six months.

Mr. G. R. Mitchison (Kettering—Lab.) moved an amendment to add that there should be included in that report, which was to be laid before Parliament, any action taken by the Board in compliance with the directions of the Minister.

Mr. Alan Lennox-Boyd (Minister of Transport) said he saw no objection to accepting the amendment.

The motion to agree with the Lords amendment, as amended, was agreed to.

**Accusations against Conservatives**

On the motion that the House agree with a Lords amendment to Clause 3 (Sale of units), Mr. L. J. Callaghan (Cardiff S. E.—Lab.) moved an amendment which, he said, was intended to widen the considerations the Commission should have in mind when disposing of transport units. The Opposition, he said, wanted to ensure that if the B.T.C. was satisfied that one of the existing depôts was going to be broken up into such small units that satisfactory services could not be maintained, they could refuse to sell. They wanted the Commission to have regard also to the financial position of those who were going to buy. Here the House was on unsavoury ground.

There was little doubt that the Disposals Board, whose nominal task it was to see that the public interest was safeguarded, would be little more than a hollow mockery; its activities were already being forestalled by City spivs, speculators and sharks who were going round units trying to find out the size and nature of the units to be sold, in advance of the sale machinery the Minister was going to set up.

Mr. Callaghan went on to accuse the United Dominions Trust of such action to obtain advance information. He also accused the Conservative Party of not playing the game fairly among themselves. When there was a disposal of public property, he added, the public should be protected; the assets should be sold to

people who were financially stable without bribes or offers of any sort. The job of financial trusts was to get the best interest for their shareholders and they cared nothing about the welfare of the road haulage industry or how the public would be served in the future.

**Minister's Denial**

Mr. Lennox-Boyd said that the suggestion that there was any underhand conspiracy between the Government and the United Dominions Trust could be treated with the contempt it deserved. He did not doubt that when nationalisation was in the air and many people were being persuaded by "voluntary" means to part with their lifetime possessions in road haulage, all sorts of hole-in-corner methods might have been encouraged.

If there were approaches made to B.T.C. staff by any outside bodies it must be for the Commission to see that proper protection was given to its rank and file.

Mr. Lennox-Boyd hoped that as a result of the Bill many small people would enter the business. The country would welcome them, and the Government hoped to give them conditions of security and permanence.

Mr. Herbert Morrison (Lewisham S.—Lab.) also accused the Conservatives. Ever since the Labour Government brought in the 1947 Transport Bill there had been a closer tie-up between the Conservative Party and road haulage operators, and, therefore, the Government.

After Viscount Hinchinbrooke (Dorset S.—C.) had accused the Labour Party of similar conduct, the closure was carried, and the Opposition amendment negatived.

At 1.15 a.m. on Wednesday, Mr. Morrison moved to report progress, but Mr. Harry Crookshank (Leader of the House) replied that there was still much ground to cover. The debate continued until 8 a.m., and as we went to press was due to be resumed on Wednesday afternoon. When the House rose, some 58 amendments remained to be discussed.

**Steel Bill Committee Stage in Lords**

The House of Lords on April 20 went into committee on the Iron & Steel Bill.

On Clause 2 (Iron & Steel Board), Lord Strabolgi moved an amendment that the chairman and at least four other members should be whole-time members.

Lord Mancroft (Lord in Waiting) resisting the amendment, said the Government desired the chairman to be independent and full-time, and not connected with the industry. The full-time members should include men from both sides of the industry; they also wanted independent members with qualifications as set out in the Bill. The Government intentions should be accepted and the Minister given a free hand to choose the strongest Board possible.

The amendment was withdrawn.

On Clause 3 (supervision of the industry by the Board), Lord Wilmot moved an amendment to provide that control be included among the duties of the Board.

The Marquess of Salisbury, resisting the amendment, said it was meant to insinuate into the Bill the whole conception of centralised control inherent in the Labour Party's own Act. The Government view was that, to stimulate private enterprise

and initiative in the national interest, a wide measure, even of general control would not normally be necessary. The work of the Board would best be done by persuasion, influence, and co-operation.

There were, he added, some limited spheres where some control was necessary to deal with abnormal circumstances; they had been kept to the minimum. In these matters the Government were not reactionaries but evolutionary progressives, and the Opposition were the reactionaries.

Lord Wilmot said this was not a supervisory but an advisory board, and to call it anything else was to mislead the public.

The amendment was negatived.

An amendment by Lord Wilmot, to include among the duties of the Board the promotion of the equitable distribution of the products of the industry, was negatived.

**Railway Pensions**

In a written reply to Major S. F. Markham (Buckingham—C.), who asked for details of the new pension scheme for British Railways wage grades, Mr. Alan Lennox-Boyd (Minister of Transport) said on April 20 that, until details had been approved, any announcement was premature.

In a further written reply to Major Markham, on the scheme recently approved for amelioration of the pensions of railway annuitants, Mr. Lennox-Boyd gave the following details:

*Conditions under which Supplementation will be granted.*

1. Supplementation will not be granted to persons receiving the State pension by reason of their being compulsory contributors for State pension at the time of retirement; nor to those who retired on ill-health pensions and receive State sickness, disablement, or industrial injury benefits.

2. Where an annuitant is in regular paid work this will be taken into account.

3. Pension, plus supplementation not to exceed £140 a year for a married couple, or £84 a year for a single person without dependants.

The scheme will operate as from January 1, 1953 (back-dated).

**Accident Reports**

Lord Leathers (Secretary of State for the Co-ordination of Transport Fuel & Power) in the House of Lords on April 14 gave details of the recent accident at Stratford and expressed his sympathy with the relatives and friends of the dead, and with the injured.

Lord Lucas of Chilworth associated himself with these expressions on behalf of the Opposition. He hoped that the Minister would see that the report of the inspecting officer was available as soon as possible. He reminded Lord Leathers they were awaiting the report on the Harrow accident. They would have to deal in due course with the report on the Princess Victoria tragedy.

Lord Leathers said the report would be produced in this particular case with all speed and be available immediately afterwards. A long time had elapsed since the Harrow accident, but the inquiry was more embracing, with widespread repercussions.

## Staff & Labour Matters

### Union of Railway Signalmen

The Union of Railway Signalmen, which claims a membership of some 9,000 signalmen, has threatened a strike unless the Railway Executive recognises the union for the purposes of negotiating conditions of service and rates of pay for signalmen who are members of it.

The decision was taken at a meeting in Leeds last Sunday after a ballot. Mr. Wallace Williams, General Secretary of the U.R.S., is understood to have said that the U.R.S. was notifying the Ministry of Labour that a dispute existed and that it reserved the right to call its members out on strike.

At present the N.U.R. is the only union in the negotiating machinery for railway conciliation staff in a position to deal with the Railway Executive on matters concerning signalmen.

### Staff for Cafeteria Cars

Restaurant car attendants have protested against the Hotels Executive proposal to man cafeteria cars with refreshment room staff. They contend that they should handle all catering in trains, and have asked the N.U.R. to raise the matter with the Hotels Executive.

## Contracts & Tenders

The Hunslet Engine Co. Ltd. has received an order for three 48½-ton 0-8-0 steam tank locomotives of 3 ft. 6 in. gauge for the Gold Coast Railways.

The Crown Agents for the Colonies have placed an order for 25 bogie cattle wagons with Cravens Railway Carriage & Wagon Co. Ltd., for the Nigerian Railway.

An order has been placed with the Metropolitan-Cammell Carriage & Wagon Co. Ltd. by the Crown Agents for the Colonies for 14 bogie parcels vans for the East African Railway & Harbours. Eleven are for the Kenya-Uganda section and three for the Tanganyika section.

The Indian Government has placed the following contracts:—

Krauss Maffei A.G., Munich: 10 "ZE" type locomotives; 10 diesel-hydraulic, broad gauge shunting locomotives, C type, with Voith transmission and M.A.N. four-stroke, eight-cyl. engine developing 400 h.p. at 1,000 r.p.m., and weighing 48 tons in service.

The Netherlands Railways have placed the following orders:—

English Electric Co. Ltd.: 90 type "C" diesel-electric shunting locomotives, weighing approximately 50 tons in service, powered by a two-stroke, four-cyl. 400 h.p. engine of Dutch manufacture. Ten of this type were supplied in 1949-50.

Heemaf Limited, Hengelo: 100 Bo-Bo diesel-electric main line freight locomotives, weighing 72 tonnes in service, to be built under licence from Baldwin-Westinghouse and the National Supply Company, U.S.A. The electrical part will be manufactured by Heemaf, the mechanical part by N.V. Allan & Company, Rotterdam, and the four-stroke eight-cyl. diesel engine, developing 935 h.p., by Masc. Gebr. Stork & Co., N.V., of Hengelo.

British Railways, Eastern Region, have placed a contract with Tersons, Limited, London, N.3, for the renewal of permanent way, Kings Cross District.

British Railways, London Midland Region, have placed the following contracts:—

Mears Bros. (Contractors) Ltd., Bromborough Port: Repairs to engine shed roof at Walton-on-the-Hill Motive Power Depot.

Macartney Limited, London, W.1: Thermal insulation and waterproofing to reinforced-concrete barrel vault roofs and canopies of the new stores buildings at Derby Locomotive Works.

Industrial Engineering Limited, London, W.1: Glazing repairs to the roof over the concourse at Liverpool Lime Street Station.

Redpath Brown & Co. Ltd., Manchester, 17: Supply and erection of steelwork for the new machine shop and stores at Leicester Motive Power Depot.

Mills Scaffold Co. Ltd., Manchester, 19: Supply on hire of scaffolding for the renewal of the roof coverings at Southport Chapel Street.

Samuel Butler & Co. Ltd., Stanningley: Maintenance and small construction contract for steelwork erection, alterations and repairs to bridges and structures in the Southern Area of the London Midland Region for 1953 and 1954.

Leonard Fairclough Limited, Adlington: Additional openings in the Kent Viaduct, bridge No. 15, on the Carnforth and Whitehaven line.

The Board of Trade reports that the closing date for the receipt of two tenders for permanent way material for the State Railways of Thailand, recorded in our February 6 and 13 issues (refs. CRE/3901/53 and CRE/3733/53), has been postponed indefinitely. New specifications using 70 lb. steel rails (in place of the original 60 lb. rail) are being prepared.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the United Kingdom Trade Commissioner at Delhi has notified a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for:—

200 axleguards (old design box type) W.I. steel class 11 for wagons.

Tenders should reach the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, by 10 a.m. on May 4. A copy of the tender documents is available for inspection at the Board of Trade (Room 6176). A further copy is available on loan in order of application. Reference CRE/13514/53 should be quoted.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the Central Trust of China is calling for tenders for:—

Two 7-ton petrol-engined logging locomotives, with maximum tractive effort on level of 1,550 kg. and axleload 3½ tons; powered by six-cylinder engine.

Four 4½-ton petrol-engined logging locomotives, with maximum tractive effort on level of 1,000 kg. and axleload 2½ tons, powered by four-cylinder engine.

Six 4½-ton diesel-engined logging locomotives, with maximum tractive effort on level of 1,000 kg. and axleload 2½ tons.

All locomotives are to be suitable for operation on track of 30 in. gauge with curvature ranging from a minimum of 40 ft. to a maximum of 400 ft. Maximum gradient is 1 in 16 and the highest working height is 10,000 ft. The locomotives are to have a maximum speed of 12-15 m.p.h.

A copy of the tender documents including a full specification of the locomotives

is available on loan in order of written application. Reference CRE/13005/53 should be quoted. Tenders should reach the office of the Central Trust of China, U.S. Aid Division, 96, Po Ai Road, Taipei Taiwan, Formosa, by noon on May 11.

The Special Register Information Service of the Board of Trade, Commercial Relations & Export Department, reports calls for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for:—

(a) 190 HB-980 switch door automatic for brakevans new type to J. Stone & Co. ref. No. 8999/1 finished in oxy. copper.

(b) 9 Ref. No. HB-NS-dynamos T.L. 24 volts, 100 amp., complete with motoring terminal, lamp resistance over voltage relay, switch gear and pulley.

8 Ref. No. HB-NS-magnetic and hand-operating switch complete with handles M and P type B-29.

(c) One Ref. No. HB-NS-dynamos T.L. 24 volt, 60 amp. with ball bearing complete with pulley cut in and out switch, battery changeover switch, lamp resistance and motoring terminals, etc.

One Ref. No. HB-NS-over voltage relay suitable for 24 volts T.L. dynamo similar to J. Stone ROB type.

One Ref. No. HB-NS-magnetic control switch for light and fans similar to J. Stone's type CDM complete with three-push button switch.

Tenders should reach the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, by 10 a.m. on May 14, 1953. Copies of the tender documents are available for inspection at the Board of Trade by representatives of interested United Kingdom manufacturers. A further copy is available on loan in order of application. References should be quoted as follows (a) CRE/13441/53; (b) CRE/13271/53; (c) CRE/13444/53.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the United Kingdom Trade Commissioner at Delhi has notified a call for tenders issued by the Directorate General of Supplies & Disposals, Government of India, for:—

(a) 12 Lubricator four-feed Detroit or Wakefield A.C. type or hydrostatic H.O. type composite for all superheated engines.

(b) 4 Ref. No. HB-NS-dynamos T.L. 24 volts, 60 amp., with ball-bearing complete in all respects with pulley, cut-in switch, battery changeover switch, lamp resistance and motoring terminals; dynamos to I.R.S. specification No. E-1-48 and switchgear to I.R.S. specification E-3-50.

4 Ref. No. HB-NS over-voltage relay suitable for 24 volts T.L.; dynamos similar to J. Stone ROB type to I.R.S. specification E-1-48.

4 Ref. No. HB-NS magnetic control switch for lights and fans similar to J. Stone type CDM, complete with three push-buttons switch to I.R.S. specification No. E-3-50.

Tenders should reach the Director General of Supplies & Disposals, Shahjahan Road, New Delhi, (a) by 10 a.m. on April 29; (b) by 10 a.m. on May 14.

A copy of the tender documents is available on loan in order of application. For (a) reference CRE/13214/53 should be quoted and for (b) CRE/13443/53.

H.M. Consul-General at Sao Paulo has reported that a few weeks ago reference was made in the local press to an agreement reached between the Federal Government and the concessionaires of the Port of Santos (Companhia Docas de



Santos) for the construction of new quays of a total length of 1,500 m., dredging the bar and the harbour basin, and the further development and equipment of the port.

The development project further provides for the purchase of machinery and equipment, which includes 116 lift trucks, for transporting and stacking goods, 27 cranes fitted with diesel engines, 100 electric cars for transporting cargo, 14 diesel-electric locomotives, 10 motor tractors, and 150 open wagons.

The Port Directorate does not give notice of its requirements and invite tenders through the medium of the press or other publications, but its inquiries for tenders are circulated to appropriate firms registered with it whenever occasion demands. United Kingdom manufacturers not already in contact are advised to apply direct to the company for registration and at the same time send copies of their catalogues. Requests for registration should be addressed to Companhia Docas de Santos, Avenida Conselheiro Rodrigues Alves, Santos, Estado de São Paulo, Brazil.

## Notes and News

**Vacancy for Draughtsmen.**—Draughtsmen, under 30 years of age, are required by British Railways, London Midland Region, in London. Candidates must have completed National Service and have had workshop training. See Official Notices on page 495.

**Gold Coast Local Civil Service.**—Applications are invited for the post of Chief Engineer required by the Gold Coast Railway. Candidates must possess a Degree in Engineering or be Corporate Members of the Institution of Civil Engineers, and also have harbour as well as railway working experience of at least ten years. See Official Notices on page 495.

**Coronation Duties for Wolverton Ambulance Team.**—Wolverton Works "A" Ambulance Team, L.M.R., has been selected to undertake special ambulance duties inside Westminster Abbey on Coronation Day. During 1952 this team was successful in winning six competitions, including the Dewar Shield, the Oxo Cup, and the Trimble Trophy.

**London Midland Region (London) Orchestral Society: Thirty-First Season.**—On Friday, May 8, the London Midland Region (London) Orchestral Society will give a concert in the Large Hall, Friends' House, Euston Road, London, N.W.1, commencing at 7.15 p.m. The orchestra, under its conductor Mr. John Grindley, will play excerpts from popular operas and musical plays.

**British Railways Coal Traffic.**—During the week ended 6 a.m. on April 20, British Railways completed their biggest weekly clearance of deep-mined and opencast coal for over three years; 3,390,930 tons of deep-mined and opencast coal were carried in this period. The weekend figure was 406,780 tons. During the week ended April 11, 300,000 tons of iron ore and 192,207 tons of iron and steel from the principal steel works were conveyed.

**Loans for Purchase of Road Transport Assets.**—Mr. R. A. Butler, Chancellor of the Exchequer, said in the House of Commons on April 20 in answer to a question that the Government had not advised the banks to give the same priority to loans for

the purchase of British Road Services lorries as to loans for the export trade. It had advised the banks that it would be consistent with Government policy that loans for such purchases should be made in suitable cases. It was, he added, in the national interest that road transport by being returned to private enterprise should be able to give increased help to industry in general whether at home or in efforts to increase exports.

**Loss of "Princess Victoria": Writ Against British Railways.**—A writ for damages on behalf of the next of kin of a passenger in the *Princess Victoria*, which sank in the gale of January 31 on the Stranraer to Larne crossing, has been served on the Railway Executive. The case will be heard in the Northern Ireland courts.

**Proposal for London Area Transport Facilities Inquiry.**—A memorandum has been presented to the Minister of Transport, Mr. Alan Lennox-Boyd, by the London sub-Committee of the Conservative Transport Committee, in which two inquiries into transport facilities in the London area are proposed. One would deal mainly with the operations of the London Transport Executive, and the other would be a long-term investigation of wider aspects of the London transport problem which are peculiar to the London area.

**Diesel Engine Users Association Luncheon.**—The annual luncheon of the Diesel Engine Users Association was held at the Connaught Rooms, London, on April 16. Mr. Gerald B. Fox, the President, in proposing the toast of the guests, recalled that this was the fortieth anniversary of the Association, and spoke of the great strides made in this period, particularly on the mechanical side in such things as combustion chambers and pistons. He quoted examples of pistons being run for 72 hr. on 25 per cent overload. Mr. W. R. Cook, Chief of the Royal Naval Scientific Service, who was the principal guest, proposed the toast of the Association. Speaking of current trends in diesel engine research, he said that mounting methods were being studied as a means of reducing engine noise and vibration, as well as tackling the cause at its source. Some of these problems could best be resolved if industry could be persuaded to help. He said the

economy of the country would be strengthened if the diesel engine was more widely used in road and rail transport. Mr. T. Hornbuckle, Past-President, proposed a vote of thanks to the President.

**The Institution of Civil Engineers.**—On Tuesday, May 5, at 5.30 p.m., a paper will be read before the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, on "The Design and Equipment of Modern Mechanised Marshalling Yards," by Mr. R. E. Sadler, Assistant Engineer, New Works, British Railways, Eastern Region.

**B.R. Amateur Boxing Championships.**—The inter-Regional finals of the British Railways Amateur Boxing Championships were held at the Albert Hall, London, on April 17. The Eastern Region was an easy winner, with 36 points, London Midland Region being second with 22. Third place was taken by the North Eastern Region, which scored 15 points. The awards were presented by Mr. John Elliot, Chairman of the Railway Executive.

**Stratford Accident, London Transport.**—The number of deaths resulting from the accident on April 8 at Stratford on the Central Line of London Transport, and recorded in our April 17 issue, has risen to twelve. Colonel D. McMullen opened the Ministry of Transport inquiry into the accident on April 16. The public hearing concluded on April 17, when Colonel McMullen stated that at a future date he would take evidence in private from the motorman of the train which had collided with the stationary train. This man was in hospital, and it would be some time before Colonel McMullen could see him.

**Third New B.R. Clyde Vessel Launched.**—The motor vessel *Maid of Skelmorlie* for British Railways Clyde services was launched on April 2 at the yard of A. & J. Inglis, Limited, by Mrs. T. F. Cameron, wife of the Chief Regional Officer, British Railways, Scottish Region. The *Maid of Skelmorlie* is similar in design to the sister vessels *Maid of Ashton*, launched on February 17, and *Maid of Argyll*, launched on March 4.

Those present at the launching ceremony included:—

Sir Ian Bolton, Member, B.T.C.; Mr. G. T. Nicholson, Member; Mr. J. L. Harrington, Chief Officer (Marine), and Mr. J. Ness, Chief Officer (New Works), the Railway Executive; Mr. T. F. Cameron, Chief Regional Officer and Mr. T. H. Moffat, Deputy Chief Regional Officer, Scottish Region; Provost W. Kerr, Millport, and Sir John Craig, Chairman, Mr. W. S. Milne, Managing Director, and Messrs. P. Gifford and J. R. Lee, Directors, A. & J. Inglis Limited.

After the ceremony, Mr. T. F. Cameron said that all the four new Clyde vessels were expected to be available for the summer programme. Though the gap between receipts and expenditure had been widening, with the advantage of all the modern skill in shipbuilding and engineering, they had in these vessels units which would be less costly to operate and which he was sure would be worthy successors to their forerunners.

**Loss by Fire of mv. "Kronprins Frederik."**—The United Steamship Company's mv. *Kronprins Frederik*, 3,895 tons, working the Harwich-Esbjerg service, was found to be on fire as she lay at her berth at Parkeston Quay, Harwich, on Sunday evening. Efforts to confine and extinguish the fire failed, and the vessel

## Indian Centenary Exhibition Stand



The setting for exhibits of the Vulcan Group at the Indian Railways Centenary Exhibition (see our March 13 issue)

## OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

**REQUIRED** by the Central Railway of Peru two Locomotive Assistants preferably single and between 26/30. Qualifications: Full apprenticeship with British Railways or Locomotive Builders and experience in one or more of the following: Railway Machine Tool Operation, Welding Boiler works, Locomotive Running or Drawing Office. Also two fully trained Steam Locomotive Engineers aged between 30/45. Experience preferably in South America with locomotive running or locomotive workshops in supervisory positions. A.M.I.Mech.E., desirable and knowledge of Spanish essential. Apply SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

**N.E.R. HISTORY.**—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—The Railway Gazette, 33, Tothill Street, London, S.W.1.

capsized early on Monday morning. The service is being maintained with another vessel, and it is hoped that provision of an additional ship will enable the high season sailing programme to be maintained in full throughout the summer.

**Replacement of Parcels Lifts at Finsbury Park, Eastern Region.**—Two 30 cwt. capacity hydraulic lifts installed at Finsbury Park in 1890 for handling parcels traffic, are to be replaced by two modern electric lifts at a cost of about £5,000. Finsbury Park Station handles about 250,000 parcels annually and the traffic has increased since 1948.

**Visit of Burmese Purchasing Mission.**—The Burmese Government Purchasing Mission, which, as recorded in our Personal columns last week, is to visit this country next month, is now expected to arrive in London from the U.S.A. on May 3. The itinerary of the visit is not known, but it is understood that it may include Birmingham, Manchester, Glasgow, Newcastle, and Bristol. Details of the Mission's requirements may be obtained from the Commercial Attaché, Embassy of the Union of Burma, 76, Cadogan Square, London, S.W.1 (Tel. Kensington 1195). Reference CA/184 should be given.

**Summer Time: Continental Service Alterations.**—Since introduction of summer time on April 19, Southern Region Continental boat trains in connection with the Short Sea, Dover/Dunkirk, and Dover/Ostend services are leaving Victoria one hour later; the Newhaven/Dieppe service leaves at 9.30 instead of 9.5 a.m. Arrivals at English ports and at Victoria are one hour later, except that of the "Night Ferry," which remains the same. The Southampton/Havre and the Eastern Region services via Harwich are not affected, except the inwards Hook of Holland day service, which reaches Harwich and Liverpool Street about an hour later.

**Stephenson Locomotive Society.**—On Saturday, May 2, the Stephenson Locomotive Society has arranged a tour in connection with the 120th anniversary of the Leicester & Swannington Railway, preceded by an inspection of relics in the Museum Annex, Newark Houses, Leicester, at 2.15 p.m. Scottish members will visit Beattock and Moffat from Glasgow and Edinburgh in the afternoon. On

**GOLD COAST LOCAL CIVIL SERVICE**  
**GOLD COAST GOVERNMENT.** Chief Engineer, Gold Coast Railway. Appointment is on contract with consolidated salary of £2,375 per annum and a gratuity of £37.10.0 for each completed 3 month period of satisfactory service. Quarters cost £120 per annum. Candidates must possess either a Degree in Engineering or be Corporate Members of the Institution of Civil Engineers; preferably with Harbour as well as Railway working experience of at least ten years. Duties are preparation of estimates, control of expenditure and responsibility for all works in the Civil Engineering Branch. Apply in writing to the DIRECTOR OF RECRUITMENT, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the reference number CDE.110/13/03.

**GOLD COAST RAILWAY CONSTRUCTION**  
**WILL ANY CONTRACTORS** from the United Kingdom or Overseas interested in tendering for a large railway construction contract in the Gold Coast please communicate with the Consulting Engineers, Messrs. Rendel, Palmer & Tritton, 125, Victoria Street, London, S.W.1. Competitive tenders will be invited on a schedule of approximate quantities the value of the contract immediately in view being in the region of 1½ million to 2 million pounds. Any contractors wishing to tender will be expected to supply substantial evidence of their financial standing and of their ability to undertake large civil engineering works overseas.

**DRAUGHTSMEN,** age under 30, required by British Railways London Midland Region in London. Must have completed National Service and have had Workshop training. Experience in the signal apparatus field desirable. Previous technical qualifications—Ordinary National Certificate in Mechanical or Electrical Engineering. Salary from £292.15.0 per annum at age 20 to £471.5.0 per annum at age 29. Rail travelling concessions. Apply in writing only, stating experience, to SIGNAL AND TELECOMMUNICATIONS ENGINEER, British Railways, London Midland Region, Euston House, Eversholt Street, London, N.W.1. Applicants who come under the provision of the Notification of Vacancies Order 1952 will require the sanction of the Ministry of Labour and National Service or a scheduled employment agency.

**ACCOUNTANT (TRAFFIC AUDITOR)** required by the Central Railway of Peru—about 30 years of age, preferably single, with general auditing and railway accounting experience, knowledge of Spanish desirable but not essential. Apply—THE SECRETARY, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

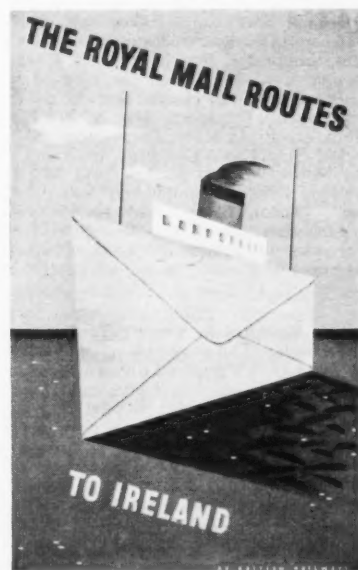
Sunday, May 3, there will be a special steam train tour from London to Portsmouth, Bishops Waltham and Havant. The party will leave Victoria Station at 9.34 a.m., and the arrival back at Waterloo will be at 5.40 p.m.

**Permanent Way Institution, Leeds & Bradford Section.**—A joint social visit, including ladies, has been arranged by the Leeds & Bradford, Lancaster, Barrow & Carlisle, York, and Sheffield Sections of the Permanent Way Institution, to take place on Saturday afternoon, May 9. The party will visit Skipton Castle and woods, followed by tea, after which a paper will be read by Mr. A. Dean, Civil Engineer, British Railways, North Eastern Region, entitled "Mechanisation of Permanent Way: Where is it Leading?", illustrated by a film and lantern slides.

**Novel London Midland Region Posters.**—The department of the Public Relations & Publicity Officer, London Midland Region,

has produced some double-royal posters of an unusual type. Two are reproduced herewith: the Abram Games poster of Blackpool printed by the Baynard Press in twelve colours, and that of the Royal Mail routes to Ireland painted by Hass and printed in seven colours by Charles & Read Limited. Another poster, depicting Bradda Head, Isle of Man, was painted by Kenneth Steel and printed by Charles & Read in eight colours. A poster by Ostrick, printed by photo-litho process by Waterlow & Sons in eight colours, draws attention to the Morecambe bathing beauty contest.

**Steel Plate Supply Scheme.**—Mr. Duncan Sandys (Minister of Supply) announced in the House of Commons last Monday that it had been decided to introduce a steel plate distribution scheme. The scheme became operative on April 21; it is voluntary, and operated by the industry itself with guidance from the Government. It has been introduced in addition to the



Two of a series of new posters produced by the London Midland Region. Blackpool Tower is symbolised by the sand structure

iron and steel distribution scheme because supplies of steel plate are especially short. Allocations will be based on previous deliveries. A committee of representatives of Government departments concerned will consider any necessary adjustments in production and deliveries.

**Metalastik Limited.**—The directors of Metalastik Limited state that since their recent announcement of an agreement for the manufacture of Metalastik products in France, a further agreement has been concluded with the Italian concern, S.A.G.A.-Pirelli, which provides for an exchange of patents as well as technical and commercial co-operation for the manufacture of rubber-to-metal bonded components.

**Beyer, Peacock & Co. Ltd.**—At a meeting of the board of Beyer, Peacock & Co. Ltd. on April 15, the directors unanimously resolved to recommend to the shareholders that a final dividend of 3½ per cent less tax and a bonus of 4½ per cent less tax be paid on the ordinary shares of the company for the year ended December 31, 1952. Combined profit of the company and subsidiaries for the year, subject to taxation, was £448,364, as against £504,738 in 1951. The combined profit after all charges, including taxation, was £171,412 (£238,065). An interim dividend of 4 per cent was paid on February 18.

**Air Car Ferry Service to Isle of Wight.**—Silver City Airways are inaugurating on May 15 a ferry service for road vehicles and passengers between Eastleigh Airport, Southampton, and Bembridge Airport, Isle of Wight. The 21-mile crossing will be the shortest air ferry route in the world and will take only nine minutes. Up to 24 services a day will be flown by Mark 32 Bristol Freighters, each accommodating up to three cars and 20 passengers, also motor and pedal cycles. Bembridge Airport is being modified for the service. Fares will be £3 2s. 6d. single for a small car, 17s. 6d. for a motor cycle, 3s. for a pedal cycle, and 13s. 6d. for passengers.

**Institute of Transport: Election of New Chairman of Local Sections.**—Mr. J. W. Dedman, District Operating Superintendent, Cambridge, British Railways, Eastern Region, has been elected chairman of the Beds., Cambs. & Hunts. Section of the Institute of Transport; Mr. N. N. Bird, Manager, Bridgewater Department, Manchester Ship Canal Company, chairman of the North Western Section; and Mr. H. Bolton, District Commercial Superintendent, Bristol, British Railways, Western Region, chairman of the Western Section. The new chairmen become *ex officio* Members of Council of the Institute from October 1, 1953.

**British Railways to Use Fewer Types of P.W. Tools.**—The possibility of standardising more than a hundred different kinds of tools, such as shovels, hammers, tampers and spanners, of which a total of more than a quarter of a million is now in use by the permanent-way staff, is being investigated by British Railways. Some designs have already been agreed in principle. These are now being tested out by the 50,000 permanent-way staff in the Regions before final decision is taken. A reduction in the number of kinds and types of permanent-way tools would cut costs and greatly reduce the number of spares it would be necessary to hold in stock.

## Forthcoming Meetings

April 28 (Tue.).—Institute of Transport, at the Connaught Rooms, Great Queen Street, W.C.2, at 12.30 for 1 p.m. Informal Luncheon. Speaker: Mr. John Elliot, Chairman of the Railway Executive.

April 29 (Wed.).—Institution of Locomotive Engineers at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 5.30 p.m. Informal Discussion on "Operating Problems on Colonial Railways."

May 1, 2 and 3 (Fri., Sat. and Sun.).—Institute of Traffic Administration, Annual Conference, Royal Beach Hotel, Southsea.

May 1 (Fri.).—The Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m.

Paper on "Suburban Traffic Operation," by Mr. C. F. Klapper.

May 5 (Tue.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "The Design and Equipment of Modern Mechanised Marshalling Yards," by Mr. R. E. Sadler.

May 6 (Wed.).—Institute of Transport, Irish Section, at the Institution of Civil Engineers, Dublin. Paper on "Air Transport" by Mr. Stuart Shaw.

May 7 (Thu.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Discussion on "Would the Strength Grading of Ordinary Portland Cement be a Contribution to Structural Economy?" Introductory Notes by Messrs. Edward Burke, L. J. Murdock, F. M. Lea and F. S. Snow.

## Railway Stock Market

Initial reactions to the Budget have been very mixed, for in contrast with outstanding strength of British Funds, which put 3½ per cent War Loan up to its highest level since 1951, industrial shares lost part of earlier gains. The strength of British Funds has been attributed to many factors; it was due in part to the fact that the industrial sections of markets have been affected by the possibility of a trade recession in the U.S.A. should peace in Korea bring any material decline in the rearmament programme. The fears of a recession in the U.S.A. may be exaggerated, because slowing down in rearmament in any case would probably be gradual, and would give an opportunity for companies prominent in the arms drive to switch back to more normal industrial activities. Moreover, the sharp fall in tin and prices of other metals and commodities is a bull point for many industrial companies because it reduces their costs considerably. Because of this fall in prices much less is heard of companies requiring additional capital to finance stocks.

British Funds eased a little in the middle of the week after news of the £125,000,000 issue of 4½ per cent stock by British Electricity. The market is also talking of the possibility that a substantial British Government loan may be issued later in the year, though there is also a rumour of a lower bank rate, which is one factor accounting for the upward trend in gilt-edged.

With British Funds and industrials monopolising attention, foreign rails have been relatively quiet this week, and as a result, prices receded a little.

United of Havana stocks became more active, but have not held best levels, though it has been assumed in some quarters that the British Government deal in Cuban sugar may hasten the expected takeover of the United Railways of Havana on reasonable terms. There is, however, no official basis for this assumption, nor for the revived suggestion that Cuba might propose to pay for the railway by annual instalments from sugar sales. United of Havana 4 per cent "A" stock is 70 at the time of going to press, the 4 per cent "B" 61 and the 5 per cent second income stock 23½ with the consolidated stock up to 5.

After their recent firmer trend, Antofagasta ordinary and preference have eased to 9 and 46½ respectively.

White Pass & Yukon no par value shares

were lower at \$32, but remained active; the convertible debentures were £111.

Canadian Pacifics came back to \$49½ with the downward trend in dollar stocks. The 4 per cent preference stock was £64½ and the 4 per cent debentures £81½.

Manila Railway debentures lost ground, the "A" coming back to 84, while the preference shares were quoted at 8s. 6d. Mexican Central "A" debentures eased to 69½ on American selling, San Paulo units were 6s. and Nitrate Rails shares 20s. 6d. Costa Rica ordinary stock remained an active feature, but profit-taking brought the price back to 13½. Guayaquil & Quito first bonds changed hands around 43½.

Nyasaland Railway 3½ per cent first debentures were 72. Among Indian stocks, Barsi Light Railway were 120½.

There was again some speculative activity in the old Russian railway bonds: Russian South Eastern were dealt in at 17s. 6d.

In other directions, Dorada Railway ordinary stock was 50½ and the 6 per cent first mortgage debentures 90½. Taitai shares were quoted at 14s.

Road Transport shares have been firmer because of the Budget tax reduction benefits. Southdown were 33s., West Riding 34s. 6d. and Lancashire Transport 47s. Aldershot & District were very firmly held and quoted at 30s., but no dealings have been recorded in the Stock Exchange lists since November. East Kent Road Car were 26s. 3d. and Devon General 28s., while Northern General were 28s. 9d. Hopes of a coming reduction in petrol and oil prices also helped sentiment in this section.

Engineering shares have reflected the uncertainty in the industrial section of the Stock Exchange. Vickers at 48s. 9d. lost part of the rise which followed the increase in the dividend from 12½ to 15 per cent. Babcock & Wilcox were 72s. 6d. and Cammell Laird 5s. shares 13s. 9d. Elsewhere, Tube Investments were 60s. and T. W. Ward 74s. Ruston & Hornsby changed hands around 40s. 3d. and Guest Keen were 51s. 9d.

Among locomotive builders and engineers, Beyer Peacock were 36s., Hurst Nelson 41s. 3d., North British Locomotive 15s. 6d. and Birmingham Carriage 31s. 6d. Vulcan Foundry were 22s. 9d., Wagon Repairs 5s. shares 12s. and Charles Roberts 5s. shares 15s. 1½d., while Gloucester Wagon 10s. shares were 12s. and Central Wagon 69s.